DataCite Metadata Schema Documentation

Version 4.5

DataCite Metadata Working Group

Nov 03, 2023

Contents

Note: This documentation is for the upcoming version 4.5 of the DataCite Metadata Schema.

The most recent schema release (4.4) is available at: https://schema.datacite.org/

Note: DataCite Metadata Working Group; (2023): DataCite Metadata Schema for the Publication and Citation of Research Data and Other Research Output v4.5; DataCite e.V. https://doi.org/10.14454/g8e5-6293

Contributors from the DataCite Metadata Working Group:

- Jan Ashton, British Library (co-chair of working group)
- Isabel Bernal, Spanish National Research Council (CSIC) (co-chair of working group)
- Felix Burger, TIB
- Madeleine de Smaele, TU Delft Library
- Samantha Foulger, ETH Zurich

- Vanessa Gabriel, University Library of the LMU Munich
- Ted Habermann, Metadata Game Changers
- Joseph Padfield, The National Gallery
- Sarah Ramdeen, Columbia University
- Anne Raugh, University of Maryland
- Wendy Robertson, University of Iowa
- Mike Shallcross, Inter-university Consortium for Political and Social Research
- Mohamed Yahia, INIST-CNRS
- Kelly Stathis, DataCite
- Kristian Garza, DataCite

1 Contents

1.1 Introduction

About DataCite

DataCite is a leading global non-profit organisation that provides Digital Object Identifiers (DOIs) for research data and other research outputs. Organizations within the research community join DataCite as members to be able to assign DOIs to all their research outputs. This way, their outputs become discoverable and associated metadata is made available to the community.

Scholarly research is producing ever-increasing amounts of digital research data and it depends on data to verify research findings, create new research, and share findings. Taking a persistent approach to access, identification, sharing, and re-use of datasets, DataCite was founded in late 2009 with these three fundamental goals:

- establish easier access to scientific research data on the Internet,
- increase acceptance of research data as legitimate, citable contributions to the scientific record, and
- support data archiving that will permit results to be verified and re-purposed for future study.

More information is available on the DataCite website and on the DataCite support site.

DataCite Community Participation

The Metadata Working Group would like to acknowledge the contributions to our work of many colleagues in our institutions who provided assistance of all kinds. Their help has been greatly appreciated. In addition, we are indebted to numerous individuals and organisations in the broader scholarly community who have taken an interest in this work. Because data citation and data management are evolving areas of interest, we look forward to continued feedback and participation.

About the DataCite Metadata Schema

Note: Citation: DataCite Metadata Working Group. (2023). DataCite Metadata Schema Documentation for the Publication and Citation of Research Data and Other Research Outputs. Version 4.5. DataCite e.V. https://doi.org/10.14454/g8e5-6293

Note that the schema and this documentation will always have the same version number.

Earlier versions will continue to be available at their previous locations for permanent reference.

The DataCite Metadata Schema is a list of core metadata properties chosen for accurate and consistent identification of a resource for citation and retrieval purposes, with recommended use instructions in the documentation. The resource that is being identified can be of any kind, but it is typically a dataset. We use the term 'dataset' in its broadest sense. We mean it to include not only numerical data, but any other research objects in keeping with DataCite's mission. The metadata schema properties are presented and described in detail in the section *DataCite Metadata Properties* in this document.

While DataCite's Metadata Schema has been expanded with each new version, it is, nevertheless, intended to be generic to the broadest range of research datasets, rather than customized to the needs of any particular discipline. DataCite metadata primarily supports citation and discovery of data; it is **not** intended to supplant or replace the discipline- or community-specific metadata that fully describes the data and is vital for understanding and reuse.

DataCite clients are strongly encouraged to provide metadata in English whenever possible, in addition to any other language that may be required by the funder or hosting organization. The DataCite Metadata Schema supports language attributes for core properties.

For a list of all changes accompanying this release, see *Version 4.5 Update*.

Lastly, we continue to support openness and the future extensibility of the schema by collaborating with the Dublin Core Metadata Initiative (DCMI) Science and Metadata Community (SAM) to maintain a DataCite to Dublin Core crosswalk, available at *DataCite to Dublin Core Mapping 4.5*.

Version 4.5 Update

Note: For the first time, the DataCite Metadata Working Group is releasing the DataCite Metadata Schema documentation as web documentation.

To access the documentation in PDF or Epub format, access the menu in the bottom left corner or the links below:

- PDF: https://datacite-metadata-schema.readthedocs.io/_/downloads/en/4.5/pdf/
- Epub: https://datacite-metadata-schema.readthedocs.io/_/downloads/en/4.5/epub/

To make the DataCite Metadata Schema more easily usable on the web, we have updated the documentation structure. As a result, numbering for footnotes, tables, and selected appendices has changed from Version 4.4.

These changes are in response to requests from DataCite community members, people like you that have used the metadata schema and have imagined ways in which it might work better for their particular use cases. We are indebted to everyone who has provided us with their feedback, allowing us to improve our service for the broader DataCite community.

Schema changes

Support for instruments

- Addition of *Instrument* to the *resourceTypeGeneral* controlled list values.
- This value may be used in *10.a resourceTypeGeneral* and other places where resourceTypeGeneral is used (*12.f resourceTypeGeneral*, *20.a relatedItemType*).
- Addition of new *relationType* pair: *IsCollectedBy* and *Collects*

Support for pre-registrations and registered reports

- Addition of *StudyRegistration* to the *resourceTypeGeneral* controlled list values.
- This value may be used in *10.a resourceTypeGeneral* and other places where resourceTypeGeneral is used (*12.f resourceTypeGeneral*, *20.a relatedItemType*).

Support for publisher identifiers

- Addition of new sub-properties for *4. Publisher*:
  - *4.a publisherIdentifier*
  - *4.b publisherIdentifierScheme*
  - *4.c schemeURI*

Documentation changes

Support for instruments

- Changes and additions to these definitions, in support of instruments:
- *3. Title*
- *2. Creator*
- *7. Contributor*
- *11. AlternateIdentifier*
- *17. Description*
- *descriptionType: TechnicalInfo*
- To enhance support for instruments, addition of new mapping: *PIDINST Schema Mapping*

Updated PhysicalObject definition

- Change to the definition of *PhysicalObject* in support of samples.

RelatedItem property

- Changes and additions to sub-property definitions:
- Addition of a note in *20.1 relatedItemIdentifier* to strongly recommend the use of an identical *12. RelatedIdentifier* for indexing.
- Addition of a note in *20.5 volume*, *20.6 issue*, *20.7 number*, *20.7.a numberType*, *20.8 firstPage*, *20.9 lastPage*, and *20.11 edition* to indicate that these subproperties should only be used with the relationType *IsPublishedIn*.
- Change to *20.8 firstPage*, *20.9 lastPage*, and *20.7 number* to specify that the pages and number refer to the resource *within* the related item (for which the DOI is being registered), not the entire related item.
- Minor changes to other RelatedItem sub-property definitions to improve consistency.
- Updated definition of descriptionType *SeriesInformation* in *17.a descriptionType* and *Appendix 1: Controlled List Definitions - descriptionType* and to clarify that it is superseded by *20. RelatedItem* with the relationType *IsPublishedIn* selected.
- To enhance support for the *20. RelatedItem* property, addition of a new guidance document: *Using RelatedItem for publication information and related resources*

Other changes and corrections

- Correction of the cardinality for properties *2.5.a affiliationIdentifier* and *7.5.a affiliationIdentifier*.
- Correction of the capitalization of properties *2.5.c schemeURI*, *7.5.c schemeURI*, and *19.2.b schemeURI*.
- Addition of a note to indicate when *19.1 funderName* is mandatory.
- Correction of the cardinality of *19.2.a funderIdentifierType* and addition of a note to indicate when it is mandatory.
- Correction of "default" value indication for nameType "Personal" (properties *2.1.a*, *7.1.a*, *20.2.1.a*, *20.12.1.a*).
- Addition of a note to *3.a titleType* (sub-property of *3. Title*) to match the corresponding note in *20.3.a titleType* (subproperty of *20.3 title* in *20. RelatedItem*).
- Addition of missing definition for dateType *Other*.
- Updated examples for nameIdentifier (properties *2.4* and *7.4*) and its attributes.
- Updated examples for affiliationIdentifier (properties *2.5* and *7.5*) and its attributes.
- Updated the full name of *relatedIdentifierType IGSN* from "International Geo Sample Number" to "International Generic Sample Number" with an updated description.
- Other minor corrections to definitions and examples.

New documentation structure

We have relocated some content to two new sections:

- *Guidance*
- *Mappings*

These sections may be updated more frequently than the metadata schema itself.

Citation

Because many users of this schema are members of a variety of academic disciplines, DataCite remains discipline-agnostic concerning matters pertaining to academic style sheet requirements. Therefore, DataCite encourages rather than requires a particular citation format. In keeping with this approach, the following is the *preferred* format for rendering a DataCite citation for human readers using the mandatory properties of the schema:

> Creator (PublicationYear): Title. Publisher. (resourceTypeGeneral). Identifier

It may also be desirable to include information from optional properties, such as Version. This is particularly important to include when citing software. For example:

> Creator (PublicationYear): Title. Version. Publisher. (resourceTypeGeneral). Identifier

For citation purposes, DataCite prefers that DOI names are displayed as linkable, permanent URLs, for example, `https://doi.org/10.1038/sdata.2016.18`; however, the Identifier may appear in its original format. If the original format is chosen, be sure to include the characters `doi:` prepended to the Identifier as in `doi:10.1038/sdata.2016.18`.

For resources that do not have a standard publication year value, DataCite recommends that PublicationYear should include the date that is preferred for use in a citation.

Here are several examples:

- Irino, T; Tada, R (2009): Chemical and mineral compositions of sediments from ODP Site 127-797. V. 2.1. Geological Institute, University of Tokyo. (dataset). https://doi.org/10.1594/PANGAEA.726855
- Geofon operator (2009): GEFON event gfz2009kciu (NW Balkan Region). GeoForschungsZentrum Potsdam (GFZ). (dataset). https://doi.org/10.1594/GFZ.GEOFON.gfz2009kciu
- Denhard, Michael (2009): dphase_mpeps: MicroPEPS LAF-Ensemble run by DWD for the MAP DPHASE project. World Data Center for Climate. (dataset). https://doi.org/10.1594/WDCC/dphase_mpeps

1.2 DataCite Metadata Properties

Overview

The properties of the DataCite Metadata Schema are presented in this section.

Conventions

Levels of obligation

There are three different levels of obligation for the metadata properties:

- **Mandatory (M)** properties *must* be provided;
- **Recommended (R)** properties are optional, but strongly recommended for interoperability; and
- **Optional (O)** (but not specifically recommended) properties provide richer description.

Repositories who wish to enhance the prospects that their metadata will be found, cited, and linked to original research are strongly encouraged to submit both the Recommended and Mandatory sets of properties. Together, the Mandatory and Recommended sets of properties and their sub-properties are especially valuable to information seekers and added-service providers, such as indexers. The Metadata Working Group members strongly urge the inclusion of metadata identified as Recommended for the purpose of achieving greater exposure for the resource's metadata record and, therefore, the underlying research itself.

The prospect that a resource's metadata will be found, cited, and linked is enhanced by using the combined Mandatory and Recommended "super set" of properties and sub-properties. These are bolded in *Table 1* (Mandatory Properties) and *Table 2* (Recommended and Optional Properties).

Naming and numbering

Properties and sub-properties have naming and numbering conventions as follows:

- properties begin with a capital letter (e.g., `Creator`)
- sub-properties begin with a lower case letter, with subsequent words using capital letters (e.g., `creatorName`, `nameType`)[1]

Each property is numbered. The major properties are numbered 1-20.

Occurrences

"Occurrences" indicates cardinality/quantity constraints for the properties as follows:

- 0-n = optional and repeatable
- 0-1 = optional, but not repeatable
- 1-n = required and repeatable
- 1 = required, but not repeatable

XML schema

In the XML schema:

- Properties are always represented as *elements*.
- Sub-properties can be either *sub-elements* or *attributes*.

The numbering convention distinguishes *elements* and *sub-elements* from *attributes*:

- *Elements* and *sub-elements* are numbered (e.g., 2. Creator, 2.1 creatorName).
- *Attributes* are represented with letters (e.g., 2.1.a nameType)

Because XML attributes are not repeatable, sub-properties represented as attributes will always have an occurrence of either 0-1 (optional) or 1 (required).

XML representation	Property or sub-property	Example
Element	Property	*2. Creator*
Sub-element	Sub-property	*2.1 creatorName*
Attribute	Sub-property	*2.1.a nameType*

XML provides an xml:lang attribute[2] that can be used on the following properties and sub-properties:

- *3. Title*
- *4. Publisher*

[1] This convention is known as "camelCase." https://en.wikipedia.org/wiki/CamelCase
[2] Allowed values IETF BCP 47, ISO 639-1 language codes, e.g. en, de, fr

- *6. Subject*
- *16. Rights*
- *17. Description*
- *20.3 title*
- *2.1 creatorName* when *2.1.a nameType* is "Organizational"
- *7.1 contributorName* when *7.1.a nameType* is "Organizational"

This provides a way to describe the language used for the *content of the specified properties*.

The schema provides the *9. Language* property to be used to describe the language of the resource.

Mandatory Properties

The mandatory properties must be supplied with any initial metadata submission to DataCite, together with their relevant sub-properties. **If one of the required properties is unavailable**, please use one of the standard (machine-recognizable) codes listed in *Appendix 3: Standard values for unknown information*.

Table 1: DataCite Mandatory Properties

ID	Property	Obligation
1	*Identifier*	M
2	*Creator*	M
3	*Title*	M
4	*Publisher*	M
5	*PublicationYear*	M
10	*ResourceType*	M

Recommended and Optional Properties

Of the Recommended set of properties, the most important to use is the `Description` property, together with the Recommended sub-property `descriptionType="Abstract"` (see *17. Description*). *Appendix 1* includes detailed descriptions of controlled list values, using bold text to indicate those values that are especially important for information seekers and added service providers. It cannot be emphasized enough how valuable an Abstract is to other scholars in finding the resource and then determining whether or not the resource, once found, is worth investigating further, re-using, or validating.

Table 2: DataCite Recommended and Optional Properties

ID	Property	Obligation
6	*Subject*	R
7	*Contributor*	R
8	*Date*	R
9	*Language*	O
11	*AlternateIdentifier*	O
12	*RelatedIdentifier*	R
13	*Size*	O
14	*Format*	O
15	*Version*	O
16	*Rights*	O
17	*Description*	R
18	*GeoLocation*	R
19	*FundingReference*	O
20	*RelatedItem*	O

1. Identifier

Obligation: Mandatory

Occurrences: 1

Definition: The Identifier is a unique string that identifies a resource.

For software, determine whether the identifier is for a specific version of a piece of software, (per the Force11 Software Citation Principles[3]), or for all versions.

Allowed values, examples, other constraints:

A DOI (Digital Object Identifier) registered by a DataCite Member. The format should be `10.21384/foo`.

Sub-properties:

- *1.a identifierType*

[3] Smith AM, Katz DS, Niemeyer KE, FORCE11 Software Citation Working Group. (2016) Software citation principles. PeerJ Computer Science 2:e86 https://doi.org/10.7717/peerj-cs.86

Example XML

```
<identifier identifierType="DOI">10.21384/foo</identifier>
```

1.a identifierType

Occurrences: 1

Definition: The type of Identifier.

Allowed values, examples, other constraints:

Controlled List Value:

- DOI

2. Creator

Obligation: Mandatory

Occurrences: 1-n

Definition: The main researchers involved in producing the data, or the authors of the publication, in priority order. For instruments this is the manufacturer or developer of the instrument. To supply multiple creators, repeat this property.

Allowed values, examples, other constraints:

May be a corporate/institutional or personal name. Note: DataCite infrastructure supports up to 10,000 names. For name lists above that size, consider attribution via linking to the related metadata.

Sub-properties:

- *2.1 creatorName*
  - *2.1.a nameType*
- *2.2 givenName*
- *2.3 familyName*
- *2.4 nameIdentifier*
  - *2.4.a nameIdentifierScheme*
  - *2.4.b schemeURI*
- *2.5 affiliation*
  - *2.5.a affiliationIdentifier*
  - *2.5.b affiliationIdentifierScheme*

- *2.5.c schemeURI*

Example XML

```
<creators>
    <creator>
        <creatorName nameType="Personal">Garcia, Sofia</creatorName>
        <givenName>Sofia</givenName>
        <familyName>Garcia</familyName>
        <nameIdentifier schemeURI="https://orcid.org/" nameIdentifierScheme="ORCID">0000-
↪0001-5727-2427</nameIdentifier>
        <affiliation affiliationIdentifier="https://ror.org/03efmqc40"␣
↪affiiationIdentifierScheme="ROR" schemeURI="https://ror.org">Arizona State University</
↪affiliation>
    </creator>
    <creator>
        <creatorName xml:lang="en" nameType="Organizational">California Digital Library</
↪creatorName>
        <nameIdentifier schemeURI="https://ror.org/" nameIdentifierScheme="ROR">https://
↪ror.org/03yrm5c26</nameIdentifier>
    </creator>
</creators>
```

2.1 creatorName

Occurrences: 1

Definition: The full name of the creator.

Allowed values, examples, other constraints:

Examples: Charpy, Antoine; Jemison, Mae; Foo Data Center

Note that the personal name format should be: family, given. Names in non-roman scripts may be transliterated according to the ALA-LC tables.

2.1.a nameType

Occurrences: 0-1

Definition: The type of name.

Allowed values, examples, other constraints:

Controlled List Values:

- Organizational
- Personal

2.2 givenName

Occurrences: 0-1

Definition: The personal or first name of the creator.

Allowed values, examples, other constraints:

Examples based on the 2.1 names: Antoine; Mae

2.3 familyName

Occurrences: 0-1

Definition: The surname or last name of the creator.

Allowed values, examples, other constraints:

Examples based on the 2.1 names: Charpy; Jemison

2.4 nameIdentifier

Occurrences: 0-n

Definition: Uniquely identifies an individual or legal entity, according to various schemes.

Allowed values, examples, other constraints:

The format is dependent upon scheme.

Examples:

- https://orcid.org/0000-0001-5727-2427
- https://isni.org/isni/0000000492299539
- https://ror.org/04aj4c181

2.4.a nameIdentifierScheme

Occurrences: 1

Definition: The name of the name identifier scheme.

Allowed values, examples, other constraints:

If nameIdentifier is used, nameIdentifierScheme is mandatory.

Examples:

- ORCID
- ISNI

- ROR

2.4.b schemeURI

Occurrences: 0-1

Definition: The URI of the name identifier scheme.

Allowed values, examples, other constraints:

Examples:

- https://orcid.org/
- https://isni.org/
- https://ror.org/

2.5 affiliation

Occurrences: 0-n

Definition: The organizational or institutional affiliation of the creator.

Allowed values, examples, other constraints

Free text.

The creator's nameType may be *Organizational* or *Personal*. In the case of an organizational creator, e.g., a research group, this will often be the name of the institution to which that organization belongs.

Examples:

- German National Library of Science and Technology
- DataCite

2.5.a affiliationIdentifier

Occurrences: 0-1

Definition: Uniquely identifies the organizational affiliation of the creator.

Allowed values, examples, other constraints:

The format is dependent upon scheme.

Examples:

- https://ror.org/04aj4c181
- https://isni.org/isni/0000000492299539

2.5.b affiliationIdentifierScheme

Occurrences: 1

Definition: The name of the affiliation identifier scheme

Allowed values, examples, other constraints:

If affiliationIdentifier is used, affiliationIdentifierScheme is mandatory.

Examples:

- ROR
- ISNI

2.5.c schemeURI

Occurrences: 0-1

Definition: The URI of the affiliation identifier scheme.

Allowed values, examples, other constraints:

Examples:

- https://ror.org/
- https://isni.org/

3. Title

Obligation: Mandatory

Occurrences: 1-n

Definition: A name or title by which a resource is known. May be the title of a dataset or the name of a piece of software or an instrument.

Allowed values, examples, other constraints:

Free text.

Sub-properties:

- *3.a titleType*

Example XML

```
<titles>
    <title xml:lang="en">Example title</title>
    <title xml:lang="en" titleType="Subtitle">Example subtitle</title>
</titles>
```

3.a titleType

Occurrences: 0-1

Definition: The type of Title (other than the Main Title).

Allowed values, examples, other constraints:

Controlled List Values:

- AlternativeTitle
- Subtitle
- TranslatedTitle
- Other

The titleType subproperty is used when more than a single title is provided. Unless otherwise indicated by titleType, a title is considered to be the main title.

4. Publisher

Obligation: Mandatory

Occurrences: 1

Definition: The name of the entity that holds, archives, publishes, prints, distributes, releases, issues, or produces the resource. This property will be used to formulate the citation, so consider the prominence of the role.

For software, use Publisher for the code repository. If there is an entity other than a code repository, that "holds, archives, publishes, prints, distributes, releases, issues, or produces" the code, use the property *7. Contributor* with contributorType "hostingInstitution" for the code repository.

Allowed values, examples, other constraints:

Examples:

- World Data Center for Climate (WDCC)
- GeoForschungsZentrum Potsdam (GFZ)
- Consejo Superior de Investigaciones Científicas
- University of Tokyo

- GitHub

Sub-properties:

- *4.a publisherIdentifier*
- *4.b publisherIdentifierScheme*
- *4.c schemeURI*

Example XML

```
<publisher xml:lang="en" publisherIdentifier="https://ror.org/04z8jg394"␣
↪publisherIdentifierScheme="ROR" schemeURI="https://ror.org/">Helmholtz Centre Potsdam -
↪ GFZ German Research Centre for Geosciences</publisher>
```

4.a publisherIdentifier

Occurrences: 0-1

Definition: Uniquely identifies the publisher, according to various schemes.

Allowed values, examples, other constraints:

Examples:

- https://ror.org/04z8jg394
- https://doi.org/10.17616/R3989R
- https://viaf.org/viaf/151411898/
- https://wikidata.org/wiki/Q7842

4.b publisherIdentifierScheme

Occurrences: 1

Definition: The name of the publisher identifier scheme.

Allowed values, examples, other constraints:

If publisherIdentifier is used, publisherIdentifierScheme is mandatory.

Examples:

- ROR
- re3data
- VIAF

- Wikidata
- Crossref Funder ID
- ISNI
- OpenDOAR
- FAIRsharing
- ISSN

4.c schemeURI

Occurrences: 0-1

Definition: The URI of the publisher identifier scheme.

Allowed values, examples, other constraints:

Examples:

- https://ror.org/
- https://re3data.org/
- https://viaf.org/
- https://www.wikidata.org/wiki/

5. PublicationYear

Obligation: Mandatory

Occurrences: 1

Definition: The year when the data was or will be made publicly available. In the case of resources such as software or dynamic data where there may be multiple releases in one year, include the Date property and sub-properties (dateType/dateInformation) to provide more information about the publication or release date details.

Allowed values, examples, other constraints:

YYYY

If an embargo period has been in effect, use the date when the embargo period ends. In the case of datasets, "publish" is understood to mean making the data available on a specific date to the community of researchers. If there is no standard publication year value, use the date that would be preferred from a citation perspective.

Example XML

```
<publicationYear>2022</publicationYear>
```

PublicationYear—Additional guidance

PublicationYear : the year when the data was or will be made publicly available. In the case of datasets, "publish" is understood to mean making the data available on a specific date to the community of researchers.

- If that date cannot be determined, use the date of registration.
- If an embargo period has been in effect, use the date when the embargo period ends.
- If there is no standard publication year value, use the date that would be preferred from a citation perspective.
- In the case of resources such as software or dynamic data where there may be multiple releases in one year, include the Date property and sub-properties (dateType/dateInformation) to provide more information about the publication or release date details.

In the case of a digitised version of a physical object

If the DOI is being used to identify a digitised version of an original item, the recommended approach is to supply the PublicationYear for the digital version and not the original object.

The *3. Title* field may be used to convey the approximate or known date of the original object. Other metadata properties available for additional date information about the object include *6. Subject* and *17. Description*. However, only *3. Title* will be part of the citation.

Here are two examples of citations using dates or date information in the titles.

> Schmidt, S., Andersen, V., Belviso, S., & Marty, J.-C. (2002). Dissolved and particulate thorium 234 concentration at time series station DYFAMED from date 1995-05-07 (Data set). PANGAEA - Data Publisher for Earth & Environmental Science. https://doi.org/10.1594/pangaea.183607
>
> Tape, K. D. (2015). Aerial Images of Alaska's Arctic Coastal Plain; 1948-1949. U.S. Geological Survey. (Image). https://doi.org/10.5066/f79021tb

6. Subject

Obligation: Recommended

Occurrences: 0-n

Definition: Subject, keyword, classification code, or key phrase describing the resource.

Allowed values, examples, other constraints:

Free text.

Sub-properties:

Example XML

```
<subjects>
  <subject xml:lang="en" subjectScheme="Library of Congress Subject Headings (LCSH)"␣
↪schemeURI="https://id.loc.gov/authorities/subjects.html" valueURI="https://id.loc.gov/
↪authorities/subjects/sh2009009655.html">Climate change mitigation</subject>
  <subject xml:lang="en" subjectScheme="ANZSRC Fields of Research" schemeURI="https://
↪www.abs.gov.au/statistics/classifications/australian-and-new-zealand-standard-research-
↪classification-anzsrc" classificationCode="370201">Climate change processes</subject>
</subject>
```

6.a subjectScheme

Occurrences: 0-1

Definition: The name of the subject scheme or classification code or authority if one is used.

Allowed values, examples, other constraints:

Free text.

Examples:

- Library of Congress Subject Headings (LCSH)
- ANZSRC Fields of Research

6.b schemeURI

Occurrences: 0-1

Definition: The URI of the subject identifier scheme.

Allowed values, examples, other constraints:

Example: https://id.loc.gov/authorities/subjects.html

6.c valueURI

Occurrences: 0-1

Definition: The URI of the subject term.

Allowed values, examples, other constraints:

Example: https://id.loc.gov/authorities/subjects/sh85118622.html

6.d classificationCode

Occurrences: 0-1

Definition: The classification code used for the subject term in the subject scheme.

Allowed values, examples, other constraints:

Example: 310607 (where 310607 is the classification code associated with the subject term "Nanobiotechnology" in the ANZSRC Fields of Research subject scheme)

The classificationCode sub-property may be used for subject schemes, like ANZSRC, which do not have valueURIs for each subject term.

7. Contributor

Obligation: Recommended

Occurrences: 0-n

Definition: The institution or person responsible for collecting, managing, distributing, or otherwise contributing to the development of the resource. To supply multiple contributors, repeat this property.

For software, if there is an alternate entity that "holds, archives, publishes, prints, distributes, releases, issues, or produces" the code, use the contributorType "hostingInstitution" for the code repository.

For instruments, if there is an institution responsible for the management of the instrument (for example, the legal owner, the operator, or an institute providing access to the instrument), use the contributorType "hostingInstitution" for the owner of the instrument.

Allowed values, examples, other constraints:

Note: DataCite infrastructure supports up to 10,000 names. For name lists above that size, consider attribution via linking to the related metadata.

Examples: Charpy, Antoine; Foo Data Center

Sub-properties:

- *7.a contributorType*
- *7.1 contributorName*
  - *7.1.a nameType*
- *7.2 givenName*
- *7.3 familyName*
- *7.4 nameIdentifier*
  - *7.4.a nameIdentifierScheme*
  - *7.4.b schemeURI*
- *7.5 affiliation*
  - *7.5.a affiliationIdentifier*
  - *7.5.b affiliationIdentifierScheme*
  - *7.5.c schemeURI*

Example XML

```
<contributors>
    <contributor contributorType="Data Collector">
        <contributorName nameType="Personal">Garcia, Sofia</contributorName>
        <givenName>Sofia</givenName>
        <familyName>Garcia</familyName>
        <nameIdentifier schemeURI="https://orcid.org/" nameIdentifierScheme="ORCID">0000-
↪0001-5727-2427</nameIdentifier>
        <affiliation affiliationIdentifier="https://ror.org/03efmqc40"␣
↪affiiationIdentifierScheme="ROR" schemeURI="https://ror.org">Arizona State University</
↪affiliation>
    </contributor>
    <contributor contributorType="HostingInstitution">
        <contributorName xml:lang="en" nameType="Organizational">California Digital␣
↪Library</contributorName>
        <nameIdentifier schemeURI="https://ror.org/" nameIdentifierScheme="ROR">https://
↪ror.org/03yrm5c26</nameIdentifier>
    </contributor>
</contributors>
```

7.a contributorType

Occurrences: 1

Definition: The type of contributor of the resource.

Allowed values, examples, other constraints:

If Contributor is used, then contributorType is mandatory.

Controlled List Values:

- *ContactPerson*
- *DataCollector*
- *DataCurator*
- *DataManager*
- *Distributor*
- *Editor*
- *HostingInstitution*
- *Producer*
- *ProjectLeader*
- *ProjectManager*
- *ProjectMember*
- *RegistrationAgency*
- *RegistrationAuthority*
- *RelatedPerson*
- *Researcher*
- *ResearchGroup*
- *RightsHolder*
- *Sponsor*
- *Supervisor*
- *WorkPackageLeader*
- *Other*

See *Appendix 1: Controlled List Definitions - contributorType* for definitions.

7.1 contributorName

Occurrences: 1

Definition: The full name of the contributor.

Allowed values, examples, other constraints:

If Contributor is used, then contributorName is mandatory.

Examples: Patel, Emily; ABC Foundation

The personal name format should be: family, given. Non- roman names should be transliterated according to the ALA-LC schemas.

7.1.a nameType

Occurrences: 0-1

Definition: The type of name.

Allowed values, examples, other constraints:

Controlled List Values:

- Organizational
- Personal

7.2 givenName

Occurrences: 0-1

Definition: The personal or first name of the contributor.

Allowed values, examples, other constraints:

Examples based on the *7.1* names: Emily

7.3 familyName

Occurrences: 0-1

Definition: The surname or last name of the contributor.

Allowed values, examples, other constraints:

Examples based on the *7.1* names: Patel

7.4 nameIdentifier

Occurrences: 0-n

Definition: Uniquely identifies an individual or legal entity, according to various schemes.

Allowed values, examples, other constraints:

The format is dependent upon scheme.

Examples:

- https://orcid.org/0000-0001-5727-2427
- https://isni.org/isni/0000000492299539
- https://ror.org/04aj4c181

7.4.a nameIdentifierScheme

Occurrences: 1

Definition: The name of the name identifier scheme.

Allowed values, examples, other constraints:

If nameIdentifier is used, nameIdentifierScheme is mandatory.

Examples:

- ORCID
- ISNI
- ROR

7.4.b schemeURI

Occurrences: 0-1

Definition: The URI of the name identifier scheme.

Allowed values, examples, other constraints:

Examples:

- https://orcid.org/
- https://isni.org/
- https://ror.org/

7.5 affiliation

Occurrences: 0-n

Definition: The organizational or institutional affiliation of the contributor.

Allowed values, examples, other constraints

Free text.

The contributor's nameType may be *Organizational* or *Personal*. In the case of an organizational contributor, e.g., a research group, this will often be the name of the institution to which that organization belongs.

Examples:

- German National Library of Science and Technology
- DataCite

7.5.a affiliationIdentifier

Occurrences: 0-1

Definition: Uniquely identifies the organizational affiliation of the contributor.

Allowed values, examples, other constraints:

The format is dependent upon scheme.

Examples:

- https://ror.org/04aj4c181
- https://isni.org/isni/0000000492299539

7.5.b affiliationIdentifierScheme

Occurrences: 1

Definition: The name of the affiliation identifier scheme.

Allowed values, examples, other constraints:

If affiliationIdentifier is used, affiliationIdentifierScheme is mandatory.

Examples:

- ROR
- ISNI

7.5.c schemeURI

Occurrences: 0-1

Definition: URI of the affiliation identifier scheme.

Allowed values, examples, other constraints:

Examples:

- https://ror.org/
- https://isni.org/

8. Date

Obligation: Recommended

Occurrences: 0-n

Definition: Different dates relevant to the work.

Allowed values, examples, other constraints:

YYYY, YYYY-MM-DD, YYYY- MM-DDThh:mm:ssTZD or any other format or level of granularity described in W3CDTF. Use RKMS-ISO8601 standard for depicting date ranges.

Example: 2004-03-02/2005- 06-02.

Years before 0000 must be prefixed with a - sign, e.g., -0054 to indicate 55 BC.

Sub-properties:

- *8.a dateType*
- *8.b dateInformation*

Example XML

```
<dates>
    <date dateType="Issued">2022-08-01</date>
    <date dateType="Other" dateInformation="Conceptualized">2020-01-01</date>
</dates>
```

8.a dateType

Occurrences: 1

Definition: The type of date.

Allowed values, examples, other constraints:

If Date is used, dateType is mandatory.

Controlled List Values:

- *Accepted*
- *Available*
- *Copyrighted*
- *Collected*
- *Created*
- *Issued*
- *Submitted*
- *Updated*
- *Valid*
- *Withdrawn*
- *Other*

See *Appendix 1: Controlled List Definitions - dateType* for definitions and recommendations.

8.b dateInformation

Occurrences: 0-1

Definition: Specific information about the date, if appropriate.

Allowed values, examples, other constraints:

Free text.

May be used to provide more information about the publication, release, or collection date details, for example. May also be used to clarify dates in ancient history. Examples: 55 BC, 55 BCE.

9. Language

Obligation: Optional

Occurrences: 0-1

Definition: The primary language of the resource.

Allowed values, examples, other constraints:

Recommended values are taken from IETF BCP 47, ISO 639-1 language codes. Examples: en, de, fr

Example XML

```
<language>en</language>
```

10. ResourceType

Obligation: Mandatory

Occurrences: 1

Definition: A description of the resource.

Allowed values, examples, other constraints:

Free text. The recommended content is a single term of some detail so that a pair can be formed with the resourceTypeGeneral sub-property. For example, a resourceType of "Census Data" paired with a resourceTypeGeneral of "Dataset" yields "Dataset/Census Data".

Sub-properties:

- *10.a resourceTypeGeneral*

Example XML

```
<resourceType resourceTypeGeneral="Dataset">Census Data</resourceType>
```

10.a resourceTypeGeneral

Occurrences: 1

Definition: The general type of a resource.

Allowed values, examples, other constraints:

Controlled List Values:

- *Audiovisual*
- *Book*
- *BookChapter*
- *Collection*
- *ComputationalNotebook*
- *ConferencePaper*
- *ConferenceProceeding*
- *DataPaper*
- *Dataset*
- *Dissertation*
- *Event*
- *Image*
- *InteractiveResource*
- *Instrument*
- *Journal*
- *JournalArticle*
- *Model*
- *OutputManagementPlan*
- *PeerReview*
- *PhysicalObject*
- *Preprint*
- *Report*
- *Service*
- *Software*
- *Sound*
- *Standard*

- *StudyRegistration*
- *Text*
- *Workflow*
- *Other*

See *Appendix 1: Controlled List Definitions - resourceTypeGeneral* for definitions and examples.

11. AlternateIdentifier

Obligation: Optional

Occurrences: 0-n

Definition: An identifier other than the primary Identifier applied to the resource being registered. This may be any alphanumeric string which is unique within its domain of issue. May be used for local identifiers, a serial number of an instrument or an inventory number. The AlternateIdentifier should be an additional identifier for the same instance of the resource (i.e., same location, same file).

Allowed values, examples, other constraints:

Free text.

Example: E-GEOD-34814

Sub-properties:

- *11.a alternateIdentifierType*

Example XML

```
<alternateIdentifiers>
    <alternateIdentifier alternateIdentifierType="Local accession number">E-GEOD-34814</
↪alternateIdentifier>
</alternateIdentifiers>
```

11.a alternateIdentifierType

Occurrences: 1

Definition: The type of the AlternateIdentifier.

Allowed values, examples, other constraints:

Free text.

If alternateIdentifier is used, alternateIdentifierType is mandatory. For the above example, the alternateIdentifierType would be “Local accession number”.

12. RelatedIdentifier

Obligation: Recommended

Occurrences: 0-n

Definition: Identifiers of related resources. These must be globally unique identifiers.

Allowed values, examples, other constraints:

Free text.

Note: DataCite Event Data collects all references to related resources based on the relatedIdentifier property.

Sub-properties:

- *12.a relatedIdentifierType*
- *12.b relationType*
- *12.c relatedMetadataScheme*
- *12.d schemeURI*
- *12.e schemeType*
- *12.f resourceTypeGeneral*

Example XML

```
<relatedIdentifiers>
    <relatedIdentifier relatedIdentifierType="DOI" relationType="IsCitedBy"␣
↪resourceTypeGeneral="JournalArticle">10.21384/bar</relatedIdentifier>
    <relatedIdentifier relatedIdentifierType="URL" relationType="HasMetadata"␣
↪relatedMetadataScheme="DDI-L" schemeType="XSD" schemeURI="http://www.ddialliance.org/
↪Specification/DDI-Lifecycle/3.1/XMLSchema/instance.xsd">https://example.com/</
↪relatedIdentifier>
</relatedIdentifiers>
```

12.a relatedIdentifierType

Occurrences: 1

Definition: The type of the RelatedIdentifier.

Allowed values, examples, other constraints:

If relatedIdentifier is used, relatedIdentifierType is mandatory.

Controlled List Values:

- *ARK*
- *arXiv*
- *bibcode*
- *DOI*
- *EAN13*
- *EISSN*
- *Handle*
- *IGSN*
- *ISBN*
- *ISSN*
- *ISTC*
- *LISSN*
- *LSID*
- *PMID*
- *PURL*
- *UPC*
- *URL*
- *URN*
- *w3id*

See *Appendix 1: Controlled List Definitions - relatedIdentifierType* for full names and examples.

12.b relationType

Occurrences: 1

Definition: Description of the relationship of the resource being registered (A) and the related resource (B).

Allowed values, examples, other constraints:

If RelatedIdentifier is used, relationType is mandatory.

Note: Some relationTypes are processed as citations and references. Read more about Contributing Citations and References on the DataCite support site.

Controlled List Values:

- *IsCitedBy*
- *Cites*

- *IsSupplementTo*
- *IsSupplementedBy*
- *IsContinuedBy*
- *Continues*
- *IsDescribedBy*
- *Describes*
- *HasMetadata*
- *IsMetadataFor*
- *HasVersion*
- *IsVersionOf*
- *IsNewVersionOf*
- *IsPreviousVersionOf*
- *IsPartOf*
- *HasPart*
- *IsPublishedIn*
- *IsReferencedBy*
- *References*
- *IsDocumentedBy*
- *Documents*
- *IsCompiledBy*
- *Compiles*
- *IsVariantFormOf*
- *IsOriginalFormOf*
- *IsIdenticalTo*
- *IsReviewedBy*
- *Reviews*
- *IsDerivedFrom*
- *IsSourceOf*
- *IsRequiredBy*
- *Requires*
- *IsObsoletedBy*
- *Obsoletes*

- *IsCollectedBy*
- *Collects*

See *Appendix 1: Controlled List Definitions - relationType* for definitions, examples and usage notes.

12.c relatedMetadataScheme

Occurrences: 0-1

Definition: The name of the scheme.

Allowed values, examples, other constraints:

Use only with this relation pair: (*HasMetadata*/ *IsMetadataFor*)

See *Appendix 1: Controlled List Definitions - relationType - HasMetadata* for example.

12.d schemeURI

Occurrences: 0-1

Definition: The URI of the relatedMetadataScheme.

Allowed values, examples, other constraints:

Use only with this relation pair: (*HasMetadata*/ *IsMetadataFor*)

See *Appendix 1: Controlled List Definitions - relationType - HasMetadata* for example.

12.e schemeType

Occurrences: 0-1

Definition: The type of the relatedMetadataScheme, linked with the schemeURI.

Allowed values, examples, other constraints:

Use only with this relation pair: (*HasMetadata*/ *IsMetadataFor*)

Examples: XSD, DDT, Turtle

12.f resourceTypeGeneral

Occurrences: 0-1

Definition: The general type of the related resource.

Allowed values, examples, other constraints:

Use the controlled list values as stated in *10.a resourceTypeGeneral*:

- *Audiovisual*
- *Book*
- *BookChapter*
- *Collection*
- *ComputationalNotebook*
- *ConferencePaper*
- *ConferenceProceeding*
- *DataPaper*
- *Dataset*
- *Dissertation*
- *Event*
- *Image*
- *InteractiveResource*
- *Instrument*
- *Journal*
- *JournalArticle*
- *Model*
- *OutputManagementPlan*
- *PeerReview*
- *PhysicalObject*
- *Preprint*
- *Report*
- *Service*
- *Software*
- *Sound*
- *Standard*

- *StudyRegistration*
- *Text*
- *Workflow*
- *Other*

See *Appendix 1: Controlled List Definitions - resourceTypeGeneral* for definitions, examples and usage notes.

13. Size

Obligation: Optional

Occurrences: 0-n

Definition: Size (e.g., bytes, pages, inches, etc.) or duration (extent), e.g., hours, minutes, days, etc., of a resource.

Allowed values, examples, other constraints:

Free text.

Examples: "15 pages", "6 MB", "45 minutes"

Example XML

```
<sizes>
  <size>15 pages</size>
  <size>1 MB</size>
</sizes>
```

14. Format

Obligation: Optional

Occurrences: 0-n

Definition: Technical format of the resource.

Allowed values, examples, other constraints:

Free text.

Use file extension or MIME type where possible, e.g., PDF, XML, MPG or application/pdf, text/xml, video/mpeg.

Example XML

```
<formats>
    <format>application/xml</format>
</formats>
```

15. Version

Obligation: Optional

Occurrences: 0-1

Definition: The version number of the resource.

Allowed values, examples, other constraints:

Suggested practice: track major_version.minor_version. Register a new identifier for a major version change. Individual stewards need to determine which are major vs. minor versions[4].

Software engineering practice follows this approach of tracking changes and giving new version numbers.

May be used in conjunction with properties *11. AlternateIdentifier* and *12. RelatedIdentifier* to indicate various information updates. May be used in conjunction with property *17. Description* to indicate the nature and file/record range of version.

Example XML

```
<version>2.1</version>
```

16. Rights

Obligation: Optional

Occurrences: 0-n

Definition: Any rights information for this resource.

The property may be repeated to record complex rights characteristics.

Allowed values, examples, other constraints:

Free text.

Provide a rights management statement for the resource or reference a service providing such information. Include embargo information if applicable.

Use the complete title of a license and include version information if applicable.

[4] Based on the work of the Earth Science Information Partners (ESIP). For more guidance, see: http://wiki.esipfed.org/index.php/Interagency_Data_Stewardship/Citations/provider_guidelines#Note_on_Versioning_and_Locators

May be used for software licenses.

Examples:

- Creative Commons Attribution 4.0 International
- Apache License, Version 2.0

Sub-properties:

- *16.a rightsURI*
- *16.b rightsIdentifier*
- *16.c rightsIdentifierScheme*
- *16.d schemeURI*

Example XML

```
<rightsList>
  <rights xml:lang="en" schemeURI="https://spdx.org/licenses/" rightsIdentifierScheme=
↪"SPDX" rightsIdentifier="CC-BY-4.0" rightsURI="https://creativecommons.org/licenses/by/
↪4.0/">Creative Commons Attribution 4.0 International</rights>
</rightsList>
```

16.a rightsURI

Occurrences: 0-1

Definition: The URI of the license.

Allowed values, examples, other constraints:

Example: https://creativecommons.org/licenses/by/3.0/de/

16.b rightsIdentifier

Occurrences: 0-1

Definition: A short, standardized version of the license name.

Allowed values, examples, other constraints:

Example: CC-BY-3.0

A list of identifiers for commonly-used licenses may be found here: (https://spdx.org/licenses/).

16.c rightsIdentifierScheme

Occurrences: 0-1

Definition: The name of the scheme.

Allowed values, examples, other constraints:

Example: SPDX

16.d schemeURI

Occurrences: 0-1

Definition: The URI of the rightsIdentifierScheme.

Allowed values, examples, other constraints:

Example: https://spdx.org/licenses/

17. Description

Obligation: Recommended

Occurrences: 0-n

Definition: All additional information that does not fit in any of the other categories. May be used for technical information or detailed information associated with a scientific instrument.

Allowed values, examples, other constraints:

Free text.

It is a best practice to supply a description.

Sub-properties:

- *17.a descriptionType*

Example XML

```
<descriptions>
    <description xml:lang="en" descriptionType="Abstract">Example abstract</description>
</descriptions>
```

17.a descriptionType

Occurrences: 1

Definition: The type of the Description.

Allowed values, examples, other constraints:

If Description is used, descriptionType is mandatory.

Controlled List Values:

- *Abstract*
- *Methods*
- *SeriesInformation*
- *TableOfContents*
- *TechnicalInfo*
- *Other*

Note: *SeriesInformation* as a container for series title, volume, issue, page number, and related fields, is now superseded by the new *20. RelatedItem* property with relationType "IsPublishedIn" selected.

See *Appendix 1: Controlled List Definitions - descriptionType* for definitions.

18. GeoLocation

Obligation: Recommended

Occurrences: 0-n

Definition: Spatial region or named place where the data was gathered or about which the data is focused.

Allowed values, examples, other constraints:

Repeat this property to indicate several different locations.

Sub-properties:

- *18.1 geoLocationPoint*
  - *18.1.1 pointLongitude*
  - *18.1.2 pointLatitude*
- *18.2 geoLocationBox*
  - *18.2.1 westBoundLongitude*
  - *18.2.2 eastBoundLongitude*
  - *18.2.3 southBoundLatitude*

Example XML

```
<geoLocations>
  <geoLocation>
    <geoLocationPlace>Disko Bay</geoLocationPlace>
    <geoLocationPoint>
      <pointLongitude>-52.000000</pointLongitude>
      <pointLatitude>69.000000</pointLatitude>
    </geoLocationPoint>
  </geoLocation>
  <geoLocation>
    <geoLocationBox>
      <westBoundLongitude>-123.27</westBoundLongitude>
      <eastBoundLongitude>-123.225</eastBoundLongitude>
      <southBoundLatitude>49.24</southBoundLatitude>
      <northBoundLatitude>49.28</northBoundLatitude>
    </geoLocationBox>
  </geoLocation>
</geoLocations>
```

18.1 geoLocationPoint

Occurrences: 0-1

Definition: A point location in space.

Allowed values, examples, other constraints:

A point contains a single longitude-latitude pair.

Use WGS 84 (World Geodetic System) coordinates and use only decimal numbers for coordinates.

18.1.1 pointLongitude

Occurrences: 1

Definition: Longitudinal dimension of point.

Allowed values, examples, other constraints:

If geoLocationPoint is used, pointLongitude is mandatory. Longitude of the geographic point expressed in decimal degrees (positive east).

Example: -67.302

Domain: -180 <= pointLongitude <= 180

18.1.2 pointLatitude

Occurrences: 1

Definition: Latitudinal dimension of point.

Allowed values, examples, other constraints:

If geoLocationPoint is used, pointLatitude is mandatory.

Latitude of the geographic point expressed in decimal degrees (positive north)

Example: 31.233

Domain: -90 <= pointLatitude <= 90

18.2 geoLocationBox

Occurrences: 0-1

Definition: The spatial limits of a box.

Allowed values, examples, other constraints:

A box is defined by two geographic points. Left low corner and right upper corner. Each point is defined by its longitude and latitude.

Use WGS 84 (World Geodetic System) coordinates and use only decimal numbers for coordinates.

18.2.1 westBoundLongitude

Occurrences: 1

Definition: Western longitudinal dimension of box.

Allowed values, examples, other constraints:

If geoLocationBox is used, westBoundLongitude is mandatory. Longitude of the geographic point expressed in decimal degrees (positive east).

Domain: -180.00 ≤ westBoundLongitude ≤ 180.00

18.2.2 eastBoundLongitude

Occurrences: 1

Definition: Eastern longitudinal dimension of box.

Allowed values, examples, other constraints:

If geoLocationBox is used, eastBoundLongitude is mandatory. Longitude of the geographic point expressed in decimal degrees (positive east).

Domain: -180.00 ≤ eastBoundLongitude ≤ 180.00

18.2.3 southBoundLatitude

Occurrences: 1

Definition: Southern latitudinal dimension of box.

Allowed values, examples, other constraints:

If geoLocationBox is used, southBoundLatitude is mandatory. Latitude of the geographic point expressed in decimal degrees (positive north).

Domain: -90.00 ≤ southBoundingLatitude ≤ 90.00

18.2.4 northBoundLatitude

Occurrences: 1

Definition: Northern latitudinal dimension of box.

Allowed values, examples, other constraints:

If geoLocationBox is used, northBoundLatitude is mandatory. Latitude of the geographic point expressed in decimal degrees (positive north).

Domain: -90.00 ≤ northBoundingLatitude ≤ 90.00

18.3 geoLocationPlace

Occurrences: 0-1

Definition: Description of a geographic location.

Allowed values, examples, other constraints:

Free text. Use to describe a geographic location.

18.4 geoLocationPolygon

Occurrences: 0-n

Definition: A drawn polygon area, defined by a set of points and lines connecting the points in a closed chain.

Allowed values, examples, other constraints:

A polygon is delimited by geographic points. Each point is defined by a longitude-latitude pair. The last point should be the same as the first point.

Use WGS 84 (World Geodetic System) coordinates and use only decimal numbers for coordinates.

18.4.1 polygonPoint

Occurrences: 4-n

Definition: A point location in a polygon.

Allowed values, examples, other constraints:

If geoLocationPolygon is used, polygonPoint must be used as well. There must be at least 4 non-aligned points to make a closed curve, with the last point described the same as the first point.

18.4.1.1 pointLongitude

Occurrences: 1

Definition: Longitudinal dimension of point.

Allowed values, examples, other constraints:

If polygonPoint is used, pointLongitude is mandatory. Longitude of the geographic point expressed in decimal degrees (positive east).

Domain: -180 <= pointLongitude <= 180

18.4.1.2 pointLatitude

Occurrences: 1

Definition: Latitudinal dimension of point.

Allowed values, examples, other constraints:

If polygonPoint is used, pointLatitude is mandatory. Latitude of the geographic point expressed in decimal degrees (positive north).

Domain: -90 <= pointLatitude <= 90

18.4.2 inPolygonPoint

Occurrences: 0-1

Definition: For any bound area that is larger than half the earth, define a (random) point inside.[5]

Allowed values, examples, other constraints:

inPolygonPoint is only necessary to indicate the "inside" of the polygon if the polygon is larger than half the earth. Otherwise the smallest of the two areas bounded by the polygon will be used.

18.4.2.1 pointLongitude

Occurrences: 1

Definition: Longitudinal dimension of point.

Allowed values, examples, other constraints:

If inPolygonPoint is used, pointLongitude is mandatory. Longitude of the geographic point expressed in decimal degrees (positive east).

18.4.2.2 pointLatitude

Occurrences: 1

Definition: Latitudinal dimension of point.

Allowed values, examples, other constraints:

If inPolygonPoint is used, pointLatitude is mandatory. Latitude of the geographic point expressed in decimal degrees (positive north).

[5] A polygon that crosses the anti-meridian (i.e. the 180th meridian) can be represented by cutting it into two polygons such that neither crosses the anti-meridian.

19. FundingReference

Obligation: Optional

Occurrences: 0-n

Definition: Information about financial support (funding) for the resource being registered.

Allowed values, examples, other constraints:

It is a best practice to supply funding information when financial support has been received.

Sub-properties:

Example XML

```
<fundingReferences>
  <fundingReference>
    <funderName>European Commission</funderName>
    <funderIdentifier funderIdentifierType="Crossref Funder ID">https://doi.org/10.13039/
↪501100000780</funderIdentifier>
    <awardNumber awardURI="https://cordis.europa.eu/project/rcn/100180_en.html">282625</
↪awardNumber>
    <awardTitle>MOTivational strength of ecosystem services and alternative ways to␣
↪express the value of BIOdiversity</awardTitle>
    </fundingReference>
  <fundingReference>
    <funderName>European Commission</funderName>
    <funderIdentifier funderIdentifierType="Crossref Funder ID">https://doi.org/10.13039/
↪501100000780</funderIdentifier>
    <awardNumber awardURI="https://cordis.europa.eu/project/rcn/100603_en.html">284382</
↪awardNumber>
    <awardTitle>Institutionalizing global genetic-resource commons. Global Strategies␣
↪for accessing and using essential public knowledge assets in the life sciences</
↪awardTitle>
  </fundingReference>
</fundingReferences>
```

19.1 funderName

Occurrences: 1

Definition: Name of the funding provider.

Allowed values, examples, other constraints:

If FundingReference is used, then funderName is mandatory.

Example: Gordon and Betty Moore Foundation

19.2 funderIdentifier

Occurrences: 0-1

Definition: Uniquely identifies a funding entity, according to various types.

Allowed values, examples, other constraints:

Example: https://doi.org/10.13039/100000936

19.2.a funderIdentifierType

Occurrences: 1

Definition: The type of the funderIdentifier.

Allowed values, examples, other constraints:

If funderIdentifier is used, funderIdentifierType is mandatory.

Controlled List Values:

- Crossref Funder ID[6]
- GRID
- ISNI
- ROR
- Other

[6] The Crossref service is called "Funder Registry" (https://www.crossref.org/services/funder-registry/) and Crossref Funder ID is the name for a Crossref identifier.

19.2.b schemeURI

Occurrences: 0-1

Definition: The URI of the funder identifier scheme.

Allowed values, examples, other constraints:

Examples:

- https://www.crossref.org/services/funder-registry/
- https://ror.org/

19.3 awardNumber

Occurrences: 0-1

Definition: The code assigned by the funder to a sponsored award (grant).

Allowed values, examples, other constraints:

Example: GBMF3859.01

19.3.a awardURI

Occurrences: 0-1

Definition: The URI leading to a page provided by the funder for more information about the award (grant).

Allowed values, examples, other constraints:

Example: https://www.moore.org/grants/list/GBMF3859.01

Note: In case the award or grant has an ID or DOI, the full URL of the grant DOI can be included here, e.g. https://doi.org/10.35802/221400.

19.4 awardTitle

Occurrences: 0-1

Definition: The human readable title or name of the award (grant).

Allowed values, examples, other constraints:

Example: Socioenvironmental Monitoring of the Amazon Basin and Xingu

20. RelatedItem

Occurrences: 0-n

Definition: Information about a resource related to the one being registered.

Allowed values, examples, other constraints:

Can be used to provide series information or a text citation where the related resource does not have an identifier. However, it is also optional to provide an identifier here.

Sub-properties:

- *20.a relatedItemType*
- *20.b relationType*
- *20.1 relatedItemIdentifier*
  - *20.1.a relatedItemIdentifierType*
  - *20.1.b relatedMetadataScheme*
  - *20.1.c schemeURI*
  - *20.1.d schemeType*
- *20.2 creator*
  - *20.2.1 creatorName*
    - *20.2.1.a nameType*
  - *20.2.2 givenName*
  - *20.2.3 familyName*
- *20.3 title*
  - *20.3.a titleType*
- *20.4 publicationYear*
- *20.5 volume*
- *20.6 issue*
- *20.7 number*
  - *20.7.a numberType*
- *20.8 firstPage*
- *20.9 lastPage*
- *20.10 publisher*
- *20.11 edition*
- *20.12 contributor*

- *20.12.a contributorType*
- *20.12.1 contributorName*
  - *20.12.1.a nameType*
- *20.12.2 givenName*
- *20.12.3 familyName*

Example XML

Note: See *Using RelatedItem for publication information and related resources* for guidance.

20.a relatedItemType

Occurrences: 1

Definition: The general type of the related item.

Allowed values, examples, other constraints:

Use the controlled list values as stated in *10.a resourceTypeGeneral*:

- *Audiovisual*
- *Book*
- *BookChapter*
- *Collection*
- *ComputationalNotebook*
- *ConferencePaper*
- *ConferenceProceeding*
- *DataPaper*
- *Dataset*
- *Dissertation*
- *Event*
- *Image*
- *InteractiveResource*
- *Instrument*
- *Journal*

- *JournalArticle*
- *Model*
- *OutputManagementPlan*
- *PeerReview*
- *PhysicalObject*
- *Preprint*
- *Report*
- *Service*
- *Software*
- *Sound*
- *Standard*
- *StudyRegistration*
- *Text*
- *Workflow*
- *Other*

See *Appendix 1: Controlled List Definitions - resourceTypeGeneral* for definitions, examples, and usage notes.

20.b relationType

Occurrences: 1

Definition: Description of the relationship of the resource being registered (A) and the related item (B).

Allowed values, examples, other constraints:

Use the controlled list values as stated in *12.b relationType*:

- *IsCitedBy*
- *Cites*
- *IsSupplementTo*
- *IsSupplementedBy*
- *IsContinuedBy*
- *Continues*
- *IsDescribedBy*
- *Describes*

- *HasMetadata*
- *IsMetadataFor*
- *HasVersion*
- *IsVersionOf*
- *IsNewVersionOf*
- *IsPreviousVersionOf*
- *IsPartOf*
- *HasPart*
- *IsPublishedIn*
- *IsReferencedBy*
- *References*
- *IsDocumentedBy*
- *Documents*
- *IsCompiledBy*
- *Compiles*
- *IsVariantFormOf*
- *IsOriginalFormOf*
- *IsIdenticalTo*
- *IsReviewedBy*
- *Reviews*
- *IsDerivedFrom*
- *IsSourceOf*
- *IsRequiredBy*
- *Requires*
- *IsObsoletedBy*
- *Obsoletes*
- *IsCollectedBy*
- *Collects*

relationType *IsPublishedIn* can be used to include series information, like title, volume, issue, page, etc.

See *Appendix 1: Controlled List Definitions - relationType* for definitions, examples, and usage notes.

20.1 relatedItemIdentifier

Occurrences: 0-1

Definition: The identifier for the related item.

Allowed values, examples, other constraints:

Example: 10.1021/jacs.9b01862

If relatedItemIdentifier is provided, an identical *12. RelatedIdentifier* is strongly recommended for indexing.

20.1.a relatedItemIdentifierType

Occurrences: 0-1

Definition: The type of the Identifier for the related item.

Allowed values, examples, other constraints:

Use the controlled list values as stated in *12.a relatedIdentifierType*:

- *ARK*
- *arXiv*
- *bibcode*
- *DOI*
- *EAN13*
- *EISSN*
- *Handle*
- *IGSN*
- *ISBN*
- *ISSN*
- *ISTC*
- *LISSN*
- *LSID*
- *PMID*
- *PURL*
- *UPC*
- *URL*
- *URN*

- *w3id*

See *Appendix 1: Controlled List Definitions - relatedIdentifierType* for definitions, examples, and usage notes.

20.1.b relatedMetadataScheme

Occurrences: 0-1

Definition: The name of the scheme.

Allowed values, examples, other constraints:

Use only with this relation pair: (*HasMetadata*/ *IsMetadataFor*)

See *Appendix 1: Controlled List Definitions - relationType - HasMetadata* for example.

20.1.c schemeURI

Occurrences: 0-1

Definition: The URI of the relatedMetadataScheme.

Allowed values, examples, other constraints:

Use only with this relation pair: (*HasMetadata*/ *IsMetadataFor*)

See *Appendix 1: Controlled List Definitions - relationType - HasMetadata* for example.

20.1.d schemeType

Occurrences: 0-1

Definition: The type of the relatedMetadataScheme, linked with the schemeURI.

Allowed values, examples, other constraints:

Use only with this relation pair: (*HasMetadata*/ *IsMetadataFor*)

Examples: XSD, DDT, Turtle

20.2 creator

Occurrences: 0-n

Definition: The institution or person responsible for creating the related resource.

To supply multiple creators, repeat this property.

20.2.1 creatorName

Occurrences: 1

Definition: The full name of the related item creator.

Allowed values, examples, other constraints:

Examples: Charpy, Antoine; Jemison, Mae; Foo Data Center

Note: The personal name, format should be: family, given. Non-roman names may be transliterated according to the ALA-LC tables.

20.2.1.a nameType

Occurrences: 0-1

Definition: The type of name.

Allowed values, examples, other constraints:

Controlled List Values:

- Organizational
- Personal

20.2.2 givenName

Occurrences: 0-1

Definition: The personal or first name of the creator.

Allowed values, examples, other constraints:

Examples based on the *20.2.1* names: Antoine; Mae

20.2.3 familyName

Occurrences: 0-1

Definition: The surname or last name of the creator.

Allowed values, examples, other constraints:

Examples based on the *20.2.1* names: Charpy; Jemison

20.3 title

Occurrences: 1-n

Definition: Title of the related item.

Allowed values, examples, other constraints:

Example: Journal of the American Chemical Society

20.3.a titleType

Occurrences: 0-1

Definition: Type of the related item title. Use this sub-property to add a subtitle, translation, or alternate title to the main title. The primary title of the related item should not have a titleType sub-property.

Allowed values, examples, other constraints:

The titleType sub-property is used when more than a single title is provided. Unless otherwise indicated by titleType, a title is considered to be the main title.

20.4 publicationYear

Occurrences: 0-1

Definition: The year when the item was or will be made publicly available.

Allowed values, examples, other constraints:

YYYY

20.5 volume

Occurrences: 0-1

Definition: Volume of the related item.

Allowed values, examples, other constraints:

Typically used with relationType *IsPublishedIn*.

Free text.

20.6 issue

Occurrences: 0-1

Definition: Issue number or name of the related item.

Allowed values, examples, other constraints:

Typically used with relationType *IsPublishedIn*.

Free text.

20.7 number

Occurrences: 0-1

Definition: Number of the resource within the related item, e.g., report number or article number.

Allowed values, examples, other constraints:

Typically used with relationType *IsPublishedIn*.

Free text.

20.7.a numberType

Occurrences: 0-1

Definition: Type of the related item's number, e.g., report number or article number.

Allowed values, examples, other constraints:

Typically used with relationType *IsPublishedIn*.

Controlled List Values:

- Article
- Chapter
- Report
- Other

20.8 firstPage

Occurrences: 0-1

Definition: First page of the resource within the related item, e.g., of the chapter, article, or conference paper in proceedings.

Allowed values, examples, other constraints:

Typically used with relationType *IsPublishedIn*.

Free text.

20.9 lastPage

Occurrences: 0-1

Definition: Last page of the resource within the related item, e.g., of the chapter, article, or conference paper in proceedings.

Allowed values, examples, other constraints:

Typically used with relationType *IsPublishedIn*.

Free text.

20.10 publisher

Occurrences: 0-1

Definition: The name of the entity that holds, archives, publishes prints, distributes, releases, issues, or produces the resource.

Allowed values, examples, other constraints:

Examples: World Data Center for Climate (WDCC); GeoForschungsZentrum Potsdam (GFZ); Geological Institute, University of Tokyo, GitHub

20.11 edition

Occurrences: 0-1

Definition: Edition or version of the related item.

Allowed values, examples, other constraints:

Typically used with relationType *IsPublishedIn*.

Free text.

20.12 contributor

Occurrences: 0-n

Definition: An institution or person identified as contributing to the development of the resource. If multiple contributors are identified, this sub-property may be repeated for each contributor.

Allowed values, examples, other constraints:

Examples: Charpy, Antoine; Foo Data Center

20.12.a contributorType

Occurrences: 1

Definition: The type of contributor of the resource.

Allowed values, examples, other constraints:

Use the controlled list values as stated in *7.a contributorType*.

See *Appendix 1: Controlled List Definitions - contributorType* for definitions, examples and usage notes.

20.12.1 contributorName

Occurrences: 1

Definition: The full name of the related item contributor.

Allowed values, examples, other constraints:

If Contributor is used, then contributorName is mandatory.

Examples: Charpy, Antoine; Jemison, Mae; Foo Data Center

Note: The personal name, format should be: family, given. Non-roman names may be transliterated according to the ALA-LC tables.

20.12.1.a nameType

Occurrences: 0-1

Definition: The type of name.

Allowed values, examples, other constraints:

Controlled List Values:

- Organizational
- Personal

20.12.2 givenName

Occurrences: 0-1

Definition: The personal or first name of the contributor.

Allowed values, examples, other constraints:

Examples based on the *20.12.1* names: Antoine; Mae

20.12.3 familyName

Occurrences: 0-1

Definition: The surname or last name of the contributor.

Allowed values, examples, other constraints:

Examples based on the *20.12.1* names: Charpy; Jemison

Guidance for handling missing mandatory property values

If providing values for any of the mandatory properties presents a difficulty, use of standard machine - recognizable codes is strongly advised. A set of the codes is provided in *Appendix 3: Standard values for unknown information*. However, we recommend that you consider the resulting effect on the citation created from the metadata provided.

Here is an example of a citation that uses machine-readable substitutions for all but one of the required metadata properties. Obviously the more metadata that is supplied, the more information is conveyed. Note that this is a demonstration DOI and not an actual identifier, so the link will not work.

```
:unkn 9999: :none. :null. Dataset. https://doi.org/10.5072/FK2JW8C992
```

1.3 Appendices

Appendix 1: Controlled List Definitions

Controlled list values that enhance the prospect that the resource's metadata will be found, cited, and linked are indicated by the phrase *Recommended for discovery*.

contributorType

Used by:

- *7.a contributorType*

Options:

- *ContactPerson*
- *DataCollector*
- *DataCurator*
- *DataManager*
- *Distributor*
- *Editor*
- *HostingInstitution*
- *Producer*
- *ProjectLeader*
- *ProjectManager*
- *ProjectMember*
- *RegistrationAgency*
- *RegistrationAuthority*
- *RelatedPerson*
- *Researcher*
- *ResearchGroup*
- *RightsHolder*
- *Sponsor*
- *Supervisor*
- *WorkPackageLeader*
- *Other*

ContactPerson

Description: Person with knowledge of how to access, troubleshoot, or otherwise field issues related to the resource.

Usage Notes: May also be the "Point of Contact" in an organisation that controls access to the resource, if that organisation is different from the Publisher, Distributor, and Data Manager.

DataCollector

Description: Person/institution responsible for finding or gathering/collecting data under the guidelines of the author(s) or Principal Investigator (PI).

Usage Notes: May also be used when crediting survey conductors, interviewers, event or condition observers, or persons responsible for monitoring key instrument data.

DataCurator

Description: Person tasked with reviewing, enhancing, cleaning, or standardizing metadata and the associated data submitted for storage, use, and maintenance within a data centre or repository.

Usage Notes: While the DataManager is concerned with digital maintenance, the DataCurator's role encompasses quality assurance focused on content and metadata. DataCurator responsibilities include: checking completeness of the submitted dataset against the content as described by the submitter; verifying standard metadata according to the applicable system or schema; adding or verifying specialized metadata to add value and ensure access across disciplines; and determining how the metadata might map to search engines, database products, and automated feeds.

Repository managers as well as data librarians working in the repository fall within this category.

Example: https://doi.org/10.20375/0000-000D-1D1F-2

DataManager

Description: Person (or organisation with a staff of data managers, such as a data centre) responsible for maintaining the finished resource.

Usage Notes: The work done by this person or organisation ensures that the resource is periodically "refreshed" in terms of software/hardware support, is kept available or is protected from unauthorized access, is stored in accordance with industry standards, and is handled in accordance with the records management requirements applicable to it.

Example: https://doi.org/10.6073/pasta/41b3ed2e152e1e4c3846e646118208e7

Distributor

Description: Institution tasked with responsibility to generate/disseminate copies of the resource in either electronic or print form.

Usage Notes: Works stored in more than one archive/repository may credit each as a distributor.

Editor

Description: A person who oversees the details related to the publication format of the resource.

Usage Notes: Note: if the Editor is to be credited in place of multiple creators, the Editor's name may be supplied as Creator, with "(Ed.)" appended to the name.

HostingInstitution

Description: Typically, the organisation allowing the resource to be available on the internet through the provision of its hardware/software/operating support.

Usage Notes: This role normally falls on the University, research center or organization where the data center/data repository belongs.

Example: Université Grenoble Alpes (UGA)

May also be used for an organisation that stores the data offline - often a data centre if that data centre is not the "publisher" of the resource.

Producer

Description: Typically, a person or organisation responsible for the artistry and form of a media product.

Usage Notes: In the data industry, this may be a company "producing" DVDs that package data for future dissemination by a distributor.

ProjectLeader

Description: Person officially designated as head of project team or sub- project team instrumental in the work necessary to development of the resource.

Usage Notes: The Project Leader is not "removed" from the work that resulted in the resource; he or she remains intimately involved throughout the life of the particular project team.

ProjectManager

Description: Person officially designated as manager of a project. Project may consist of one or many project teams and sub-teams.

Usage Notes: The manager of a project normally has more administrative responsibility than actual work involvement.

ProjectMember

Description: Person on the membership list of a designated project/project team.

Usage Notes: This vocabulary may or may not indicate the quality, quantity, or substance of the person's involvement.

RegistrationAgency

Description: Institution/organisation officially appointed by a Registration Authority to handle specific tasks within a defined area of responsibility.

Usage Notes: DataCite is a Registration Agency for the International DOI Foundation (IDF). One of DataCite's tasks is to assign DOI prefixes to the allocating agents who then assign the full, specific character string to data clients, provide metadata back to the DataCite registry, etc.

RegistrationAuthority

Description: A standards-setting body from which Registration Agencies obtain official recognition and guidance.

Usage Notes: The IDF serves as the Registration Authority for the International Standards Organisation (ISO) in the area/domain of Digital Object Identifiers.

RelatedPerson

Description: A person without a specifically defined role in the development of the resource, but who is someone the author wishes to recognize.

Usage Notes: This person could be an author's intellectual mentor, a person providing intellectual leadership in the discipline or subject domain, etc.

Researcher

Description: A person involved in analysing data or the results of an experiment or formal study. May indicate an intern or assistant to one of the authors who helped with research but who was not so "key" as to be listed as an author.

Usage Notes: Should be a person, not an institution. Note that a person involved in the gathering of data would fall under the contributorType "DataCollector." The researcher may find additional data online and correlate it to the data collected for the experiment or study, for example.

ResearchGroup

Description: Typically refers to a group of individuals with a lab, department, or division that has a specifically defined focus of activity.

Usage Notes: May operate at a narrower level of scope; may or may not hold less administrative responsibility than a project team.

Example: Space Research & Planetary Sciences Division of the University of Bern (WP Unibe)

Source: doi:10.26302/SSHADE/EXPERIMEN T_OP_20201104_001

RightsHolder

Description: Person or institution owning or managing property rights, including intellectual property rights over the resource.

Usage Notes: —

Sponsor

Description: Person or organisation that issued a contract or under the auspices of which a work has been written, printed, published, developed, etc.

Usage Notes: Includes organisations that provide in-kind support, through donation, provision of people or a facility or instrumentation necessary for the development of the resource, etc.

Supervisor

Description: Designated administrator over one or more groups/teams working to produce a resource, or over one or more steps of a development process.

Usage Notes: —

WorkPackageLeader

Description: A Work Package is a recognized data product, not all of which is included in publication. The package, instead, may include notes, discarded documents, etc. The Work Package Leader is responsible for ensuring the comprehensive contents, versioning, and availability of the Work Package during the development of the resource.

Usage Notes: —

Other

Description: Any person or institution making a significant contribution to the development and/or maintenance of the resource, but whose contribution is not adequately described by any of the other values for contributorType.

Usage Notes: Could be a photographer, artist, or writer whose contribution helped to publicize the resource (as opposed to creating it), a reviewer of the resource, someone providing administrative services to the author (such as depositing updates into an online repository, analysing usage, etc.), or one of many other roles.

dateType

Used by:

- *8.a dateType*

Options:

- *Accepted*
- *Available*
- *Copyrighted*
- *Collected*
- *Created*
- *Issued*
- *Submitted*
- *Updated*
- *Valid*
- *Withdrawn*
- *Other*

Accepted

Description: The date that the publisher accepted the resource into their system.

Usage Notes: To indicate the start of an embargo period, use Accepted or *Submitted*, as appropriate.

Available

Description: The date the resource is made publicly available. May be a range.

Usage Notes: To indicate the end of an embargo period, use Available.

Copyrighted

Description: The specific, documented date at which the resource receives a copyrighted status, if applicable.

Usage Notes: —

Collected

Description: The date or date range in which the resource content was collected.

Usage Notes: To indicate precise or particular timeframes in which research was conducted.

Created

Description: The date the resource itself was put together; this could refer to a timeframe in ancient history, a date range, or a single date for a final component, e.g., the finalised file with all the data.

Usage Notes: *Recommended for discovery.*

Issued

Description: The date that the resource is published or distributed, e.g., to a data centre.

Usage Notes: —

Submitted

Description: The date the creator submits the resource to the publisher. This could be different from Accepted if the publisher then applies a selection process.

Usage Notes: *Recommended for discovery.*

To indicate the start of an embargo period, use Submitted or *Accepted*, as appropriate.

Updated

Description: The date of the last update to the resource, when the resource is being added to. May be a range.

Usage Notes: —

Valid

Description: The date or date range during which the dataset or resource is accurate.

Usage Notes: —

Withdrawn

Description: The date the resource is removed.

Usage Notes: It is good practice to include a *17. Description* that indicates the reason for the retraction or withdrawal.

Other

Description: Other date that does not fit into an existing category.

Usage Notes: -

resourceTypeGeneral

Used by:

- *10.a resourceTypeGeneral*
- *12.f resourceTypeGeneral*
- *20.a relatedItemType*

Options:[7]

- *Audiovisual*
- *Book*
- *BookChapter*
- *Collection*

[7] Where there is direct correspondence with the Dublin Core Metadata, DataCite definitions have borrowed liberally from the DCMI definitions. See: http://dublincore.org/documents/dcmi-terms/index.shtml

- *ComputationalNotebook*
- *ConferencePaper*
- *ConferenceProceeding*
- *DataPaper*
- *Dataset*
- *Dissertation*
- *Event*
- *Image*
- *Instrument*
- *InteractiveResource*
- *Journal*
- *JournalArticle*
- *Model*
- *OutputManagementPlan*
- *PeerReview*
- *PhysicalObject*
- *Preprint*
- *Report*
- *Service*
- *Software*
- *Sound*
- *Standard*
- *StudyRegistration*
- *Text*
- *Workflow*
- *Other*

Audiovisual

Description: A series of visual representations imparting an impression of motion when shown in succession. May or may not include sound.

Examples and Usage Notes: May be used for films, video, etc.

Example: https://api.datacite.org/dois/application/vnd.datacite.datacite+xml/10.17608/k6.auckland.4620790.v1

Suggested Dublin Core Mapping: MovingImage

Book

Description: A medium for recording information in the form of writing or images, typically composed of many pages bound together and protected by a cover.

Examples and Usage Notes:

Example:

```
<resourceType resourceTypeGeneral="Book">Textbook</resourceType>
```

Suggested Dublin Core Mapping: Text

BookChapter

Description: One of the main divisions of a book.

Examples and Usage Notes:

https://api.datacite.org/dois/application/vnd.datacite.datacite+xml/10.15122/isbn.978-2-406-09313-8.p.0639

https://api.datacite.org/dois/application/vnd.datacite.datacite+xml/10.17613/m6631d

Suggested Dublin Core Mapping: Text

Collection

Description: An aggregation of resources, which may encompass collections of one resourceType as well as those of mixed types. A collection is described as a group; its parts may also be separately described.

Examples and Usage Notes: A collection of samples, or various files making up a report

Example: https://api.datacite.org/dois/application/vnd.datacite.datacite+xml/10.1594/pangaea.877589

Suggested Dublin Core Mapping: Collection

ComputationalNotebook

Description: A virtual notebook environment used for literate programming.

Examples and Usage Notes:

Example:

```
<resourceType resourceTypeGeneral="ComputationalNotebook">Jupyter</resourceType>
```

Suggested Dublin Core Mapping: InteractiveResource

ConferencePaper

Description: Article that is written with the goal of being accepted to a conference.

Examples and Usage Notes:

Example:

```
<resourceType resourceTypeGeneral="ConferencePaper">Experience Report</resourceType>
```

Suggested Dublin Core Mapping: Text

ConferenceProceeding

Description: Collection of academic papers published in the context of an academic conference.

Examples and Usage Notes:

Example:

```
<resourceType resourceTypeGeneral="ConferenceProceeding">Annual Convention</resourceType>
```

Suggested Dublin Core Mapping: Text

DataPaper

Description: A factual and objective publication with a focused intent to identify and describe specific data, sets of data, or data collections to facilitate discoverability.

Examples and Usage Notes: A data paper describes data provenance and methodologies used in the gathering, processing, organizing, and representing the data

Example: https://api.datacite.org/dois/application/vnd.datacite.datacite+xml/10.17912/w2mw2d

Suggested Dublin Core Mapping: Text

Dataset

Description: Data encoded in a defined structure.

Examples and Usage Notes: Data file or files

Example: https://api.datacite.org/dois/application/vnd.datacite.datacite+xml/10.1594/pangaea.804876

Suggested Dublin Core Mapping: Dataset

Dissertation

Description: A written essay, treatise, or thesis, especially one written by a candidate for the degree of Doctor of Philosophy.

Examples and Usage Notes:

Example:

```
<resourceType resourceTypeGeneral="Dissertation">PhD thesis</resourceType>
```

Suggested Dublin Core Mapping: Text

Event

Description: A non-persistent, time-based occurrence.

Examples and Usage Notes: Descriptive information and/or content that is the basis for discovery of the purpose, location, duration, and responsible agents associated with an event such as a webcast or convention

Example: https://api.datacite.org/dois/application/vnd.datacite.datacite+xml/10.7269/p3rn35sz

Suggested Dublin Core Mapping: Event

Image

Description: A visual representation other than text.

Examples and Usage Notes: Digitised or born digital images, drawings or photographs

Example: https://api.datacite.org/dois/application/vnd.datacite.datacite+xml/10.6083/m4qn65c5

Suggested Dublin Core Mapping: Image

Instrument

Description: A device, tool or apparatus used to obtain, measure and/or analyze data.

Examples and Usage Notes: Note that this is meant to be the instrument instance, e.g., the individual physical device, not the digital description or design of an instrument.

Example:

```
<resourceType resourceTypeGeneral="Instrument">Reflectometer</resourceType>
```

Suggested Dublin Core Mapping: N/A

InteractiveResource

Description: A resource requiring interaction from the user to be understood, executed, or experienced.

Examples and Usage Notes: Training modules, files that require use of a viewer (e.g., Flash), or query/response portals

Example: https://api.datacite.org/dois/application/vnd.datacite.datacite+xml/10.7269/p3tb14tr

Suggested Dublin Core Mapping: InteractiveResource

Journal

Description: A scholarly publication consisting of articles that is published regularly throughout the year.

Examples and Usage Notes:

Example:

```
<resourceType resourceTypeGeneral="Journal"></resourceType>
```

Suggested Dublin Core Mapping: Text

JournalArticle

Description: A written composition on a topic of interest, which forms a separate part of a journal.

Examples and Usage Notes:

Example:

```
<resourceType resourceTypeGeneral="JournalArticle"></resourceType>
```

Suggested Dublin Core Mapping: Text

Model

Description: An abstract, conceptual, graphical, mathematical or visualization model that represents empirical objects, phenomena, or physical processes.

Examples and Usage Notes: Modelled descriptions of, for example, different aspects of languages or a molecular biology reaction chain

Example: https://api.datacite.org/dois/application/vnd.datacite.datacite+xml/10.5285/4d866cd2-c907-4ce2-b070-084ca9779dc2

Suggested Dublin Core Mapping: N/A

OutputManagementPlan

Description: A formal document that outlines how research outputs are to be handled both during a research project and after the project is completed.

Examples and Usage Notes: Includes data, software, and materials.

Example:

```
<resourceType resourceTypeGeneral="OutputManagementPlan">Data Management Plan</
↪resourceType>
```

Suggested Dublin Core Mapping: Text

PeerReview

Description: Evaluation of scientific, academic, or professional work by others working in the same field.

Examples and Usage Notes: https://api.datacite.org/dois/application/vnd.datacite.datacite+xml/10.6084/m9.figshare.5742270

Example:

```
<resourceType resourceTypeGeneral="PeerReview">Scientific Article</resourceType>
```

Suggested Dublin Core Mapping: Text

PhysicalObject

Description: A physical object or substance.

Examples and Usage Notes: Artifacts, specimens, material samples, and features-of-interest of any size. Note that digital representations of physical objects should use one of the other resourceTypeGeneral values.

Example: https://api.datacite.org/dois/application/vnd.datacite.datacite+xml/10.7299/X78052RB

Suggested Dublin Core Mapping: PhysicalObject

Preprint

Description: A version of a scholarly or scientific paper that precedes formal peer review and publication in a peer-reviewed scholarly or scientific journal.

Examples and Usage Notes:

Example:

```
<resourceType resourceTypeGeneral="Preprint">Research Paper</resourceType>
```

Suggested Dublin Core Mapping: Text

Report

Description: A document that presents information in an organized format for a specific audience and purpose.

Examples and Usage Notes:

Example:

```
<resourceType resourceTypeGeneral="Report">Annual Report</resourceType>
```

Suggested Dublin Core Mapping: Text

Service

Description: An organized system of apparatus, appliances, staff, etc., for supplying some function(s) required by end users.

Examples and Usage Notes: Data management service, or long-term preservation service

Example: https://api.datacite.org/dois/application/vnd.datacite.datacite+xml/10.21938/3I01ISNUCODNH1ZJBCVUWA

Suggested Dublin Core Mapping: Service

Software

Description: A computer program other than a computational notebook, in either source code (text) or compiled form. Use this type for general software components supporting scholarly research. Use the "ComputationalNotebook" value for virtual notebooks.

Examples and Usage Notes: Software supporting scholarly research

Example: https://api.datacite.org/dois/application/vnd.datacite.datacite+xml/10.4225/03/5954F738EE5AA

Suggested Dublin Core Mapping: Software

Sound

Description: A resource primarily intended to be heard.

Examples and Usage Notes: Audio recording

Example: https://api.datacite.org/dois/application/vnd.datacite.datacite+xml/10.7282/T3J67F05

Suggested Dublin Core Mapping: Sound

Standard

Description: Something established by authority, custom, or general consent as a model, example, or point of reference.

Examples and Usage Notes:

Example:

```
<resourceType resourceTypeGeneral="Standard">Dublin Core</resourceType>
```

Suggested Dublin Core Mapping: Text

StudyRegistration

Description: A detailed, time-stamped description of a research plan, often openly shared in a registry or published in a journal before the study is conducted to lend accountability and transparency in the hypothesis generating and testing process.

Examples and Usage Notes: Includes pre-registrations, registered reports, and clinical trials. Study registrations are sometimes peer-reviewed and may include the hypothesis, expected results, study design, and/or analysis plan.

Example:

```
<resourceType resourceTypeGeneral="StudyRegistration">Pre-registration</resourceType>
```

Suggested Dublin Core Mapping: Text

Text

Description: A resource consisting primarily of words for reading that is not covered by any other textual resource type in this list.

Examples and Usage Notes:

Example: https://api.datacite.org/dois/application/vnd.datacite.datacite+xml/10.5682/9786065914018

Suggested Dublin Core Mapping: Text

Workflow

Description: A structured series of steps which can be executed to produce a final outcome, allowing users a means to specify and enact their work in a more reproducible manner.

Examples and Usage Notes: Computational workflows involving sequential operations made on data by wrapped software and may be specified in a format belonging to a workflow management system, such as Taverna (http://www.taverna.org.uk/).[8]

Suggested Dublin Core Mapping: N/A

Other

Description: If selected, supply a value for ResourceType.

Examples and Usage Notes: —

Suggested Dublin Core Mapping: —

relatedIdentifierType

Used by:

- *12.a relatedIdentifierType*
- *20.1.a relatedItemIdentifierType*

Options:

[8] An education module on workflows prepared by DataONE is available at http://www.dataone.org/sites/all/documents/L10_AnalysisWorkflows.pptx

- *ARK*
- *arXiv*
- *bibcode*
- *DOI*
- *EAN13*
- *EISSN*
- *Handle*
- *IGSN*
- *ISBN*
- *ISSN*
- *ISTC*
- *LISSN*
- *LSID*
- *PMID*
- *PURL*
- *UPC*
- *URL*
- *URN*
- *w3id*

ARK

Full Name: Archival Resource Key

Description: A URI designed to support long-term access to information objects. In general, ARK syntax is of the form (brackets, [ ]. indicate optional elements):

`[http://NMA/]ark:/NAAN/Name [Qualifier].`

Example:

```
<relatedIdentifier relatedIdentifierType="ARK" relationType="IsCitedBy">ark:/13030/
↪tqb3kh97gh8w</relatedIdentifier>
```

arXiv

Full Name: arXiv identifier

Description: arXiv.org is a repository of preprints of scientific papers in the fields of mathematics, physics, astronomy, computer science, quantitative biology, statistics, and quantitative finance.

Example:

```
<relatedIdentifier relatedIdentifierType="arXiv" relationType="IsCitedBy">arXiv:0706.0001
↪</relatedIdentifier>
```

bibcode

Full Name: Astrophysics Data System bibliographic codes

Description: A standardized 19-character identifier according to the syntax `yyyyjjjjjvvvvmppppa`. See http://info-uri.info/registry/OAIHandler?verb=GetRecord&metadataPrefix=reg&identifier=info:bibcode/.

Example:

```
<relatedIdentifier relatedIdentifierType="bibcode" relationType="IsCitedBy">2018AGUFM.
↪A24K..07S</relatedIdentifier>
```

Note: bibcodes can be searched via https://ui.adsabs.harvard.edu/ or resolved using `https://ui.adsabs.harvard.edu/abs/<bibcode>`.

DOI

Full Name: Digital Object Identifier

Description: A character string used to uniquely identify an object. A DOI name is divided into two parts, a prefix and a suffix, separated by a slash.

Example:

```
<relatedIdentifier relatedIdentifierType="DOI" relationType="IsSupplementTo">10.1016/j.
↪epsl.2011.11.037</relatedIdentifier>
```

EAN13

Full Name: European Article Number (now renamed International Article Number, but retaining the original acronym)

Description: A 13-digit barcoding standard that is a superset of the original 12-digit Universal Product Code (UPC) system.

Example:

```
<relatedIdentifier relatedIdentifierType="EAN13" relationType="Cites">9783468111242</
↪relatedIdentifier>
```

EISSN

Full Name: Electronic International Standard Serial Number

Description: ISSN used to identify periodicals in electronic form (eISSN or e-ISSN).

Example:

```
<relatedIdentifier relatedIdentifierType="eISSN" relationType="Cites">1562-6865</
↪relatedIdentifier>
```

Handle

Full Name: Handle

Description: This refers specifically to an ID in the Handle system operated by the Corporation for National Research Initiatives (CNRI).

Example:

```
<relatedIdentifier relatedIdentifierType="Handle" relationType="References">10013/epic.
↪10033</relatedIdentifier>
```

IGSN

Full Name: International Generic Sample Number

Description: A code that uniquely identifies samples from our natural environment and related features-of-interest.

Example:

```
<relatedIdentifier relatedIdentifierType="IGSN" relationType="References">IECUR0097</
↪relatedIdentifier>
```

ISBN

Full Name: International Standard Book Number

Description: A unique numeric book identifier. There are 2 formats: a 10-digit ISBN format and a 13-digit ISBN.

Example:

```
<relatedIdentifier><relatedIdentifier relatedIdentifierType="ISBN" relationType="IsPartOf
↪">978-3-905673-82-1</relatedIdentifier>
```

ISSN

Full Name: International Standard Serial Number

Description: A unique 8-digit number used to identify a print or electronic periodical publication.

Example:

```
<relatedIdentifier relatedIdentifierType="ISSN" relationType="IsPartOf">0077-5606</
↪relatedIdentifier>
```

ISTC

Full Name: International Standard Text Code

Description: A unique "number" assigned to a textual work. An ISTC consists of 16 numbers and/or letters.

Example:

```
<relatedIdentifier relatedIdentifierType="ISTC" relationType="Cites">0A9 2002 12B4A105 7
↪</relatedIdentifier>
```

LISSN

Full Name: Linking ISSN

Description: The linking ISSN or ISSN-L enables collocation or linking among different media versions of a continuing resource.

Example:

```
<relatedIdentifier relatedIdentifierType="LISSN" relationType="Cites">1188-1534</
↪relatedIdentifier>
```

LSID

Full Name: Life Science Identifiers

Description: A unique identifier for data in the Life Science domain. Format: `urn:lsid:authority:namespace:identifier:revision`.

Example:

```
<relatedIdentifier relatedIdentifierType="LSID" relationType="Cites">urn:lsid:ubio.
↪org:namebank:11815</relatedIdentifier>
```

PMID

Full Name: PubMed identifier

Description: A unique number assigned to each PubMed record.

Example:

```
<relatedIdentifier relatedIdentifierType="PMID" relationType="IsReferencedBy">12082125</
↪relatedIdentifier>
```

PURL

Full Name: Persistent Uniform Resource Locator

Description: A PURL has three parts: (1) a *protocol*, (2) a *resolver address*, and (3) a *name*.

Example:

```
<relatedIdentifier relatedIdentifierType="PURL" relationType="Cites">http://purl.oclc.
↪org/foo/bar</relatedIdentifier>
```

UPC

Full Name: Universal Product Code

Description: A barcode symbology used for tracking trade items in stores. Its most common form, the UPC-A, consists of 12 numerical digits.

Example:

```
<relatedIdentifier relatedIdentifierType="UPC" relationType="Cites">123456789999</
↪relatedIdentifier>
```

URL

Full Name: Uniform Resource Locator

Description: Also known as web address, a URL is a specific character string that constitutes a reference to a resource. The syntax is: `scheme://domain:port/path?query_string#fragment_id`.

Example:

```
<relatedIdentifier relatedIdentifierType="URL" relationType="IsCitedBy">http://www.
↪heatflow.und.edu/index2.html</relatedIdentifier>
```

URN

Full Name: Uniform Resource Name

Description: A unique and persistent identifier of an electronic document. The syntax is: `urn:<NID>:<NSS>`. The leading urn: sequence is case-insensitive, <NID> is the namespace identifier, <NSS> is the namespace-specific string.

Example:

```
<relatedIdentifier relatedIdentifierType="URN" relationType="IsSupplementTo">
↪urn:nbn:de:101:1-201102033592</relatedIdentifier>
```

w3id

Full Name: Permanent identifier for Web applications

Description: Mostly used to publish vocabularies and ontologies. The letters 'w3' stand for "World Wide Web".

Example:

```
<relatedIdentifier relatedIdentifierType="w3id" relationType="IsCitedBy">https://w3id.
↪org/games/spec/coil#Coil_Bomb_Die_Of_Age</relatedIdentifier>
```

relationType

Description of the relationship of the resource being registered (A) and the related resource (B).

Used by:

- *12.b relationType*
- *20.b relationType*

Note: Some relationTypes are processed as citations and references. Read more about Contributing Citations and References on the DataCite support site.

Options:

- *IsCitedBy*
- *Cites*
- *IsSupplementTo*
- *IsSupplementedBy*
- *IsContinuedBy*
- *Continues*
- *Describes*
- *IsDescribedBy*
- *HasMetadata*
- *IsMetadataFor*
- *HasVersion*
- *IsVersionOf*
- *IsNewVersionOf*
- *IsPreviousVersionOf*
- *IsPartOf*
- *HasPart*
- *IsPublishedIn*
- *IsReferencedBy*
- *References*
- *IsDocumentedBy*
- *Documents*
- *IsCompiledBy*
- *Compiles*
- *IsVariantFormOf*
- *IsOriginalFormOf*
- *IsIdenticalTo*
- *IsReviewedBy*
- *Reviews*

- *IsDerivedFrom*
- *IsSourceOf*
- *IsRequiredBy*
- *Requires*
- *Obsoletes*
- *IsObsoletedBy*
- *IsCollectedBy*
- *Collects*

IsCitedBy

Definition: indicates that B includes A in a citation

Example and Usage Notes:

Recommended for discovery.

```
<relatedIdentifier relatedIdentifierType="DOI"relationType="IsCited By">10.4232/10.ASEAS-
↪5.2-1</relatedIdentifier>
```

Cites

Definition: indicates that A includes B in a citation

Example and Usage Notes:

Recommended for discovery.

```
<relatedIdentifier relatedIdentifierType="ISBN" relationType="Cites">0761964312</
↪relatedIdentifier>
```

IsSupplementTo

Definition: indicates that A is a supplement to B

Example and Usage Notes:

Recommended for discovery.

```
<relatedIdentifier relatedIdentifierType="URN" relationType="IsSupplementTo">
↪urn:nbn:de:0168-ssoar-13172</relatedIdentifier>
```

IsSupplementedBy

Definition: indicates that B is a supplement to A

Example and Usage Notes:

Recommended for discovery.

```
<relatedIdentifier relatedIdentifierType="PMID" relationType="IsSupplementedBy">16911322
↪</relatedIdentifier>
```

IsContinuedBy

Definition: indicates A is continued by the work B

Example and Usage Notes:

```
<relatedIdentifier relatedIdentifierType="URN" relationType="IsContinuedBy">
↪urn:nbn:de:bsz:21-opus-4967</relatedIdentifier>
```

Continues

Definition: indicates A is a continuation of the work B

Example and Usage Notes:

```
<relatedIdentifier relatedIdentifierType="URN" relationType="Continues">
↪urn:nbn:de:bsz:21-opus-4966</relatedIdentifier>
```

Describes

Definition: indicates A describes B

Example and Usage Notes:

```
<relatedIdentifier relatedIdentifierType="DOI" relationType="Describes">10.6084/m9.
↪figshare.c.3288407</relatedIdentifier>
```

IsDescribedBy

Definition: indicates A is described by B

Example and Usage Notes:

```
<relatedIdentifier relatedIdentifierType="DOI" relationType="IsDescribedBy">10.1038/
↪sdata.2016.123</relatedIdentifier>
```

HasMetadata

Definition: indicates resource A has additional metadata B

Example and Usage Notes:

```
<relatedIdentifier relatedIdentifierType="DOI" relationType="HasMetadata"␣
↪relatedMetadataScheme="DDI-L" schemeURI="http://www.ddialliance.org/Specification/DDI-
↪Lifecycle/3.1/XMLSchema/instance.xsd">10.1234/567890</relatedIdentifier>
```

IsMetadataFor

Definition: indicates additional metadata A for a resource B

Example and Usage Notes:

```
<relatedIdentifier relatedIdentifierType="DOI" relationType="IsMetadataFor"␣
↪relatedMetadataScheme="DDI-L" schemeURI="http://www.ddialliance.org/Specification/DDI-
↪Lifecycle/3.1/XMLSchema/instance.xsd">10.1234/567891</relatedIdentifier>
```

HasVersion

Definition: indicates A has a version B

Example and Usage Notes:

The registered resource such as a software package or code repository has a versioned instance (indicates A has the instance B). It may be used, e.g., to relate an un-versioned code repository to one of its specific software versions.

```
<relatedIdentifier relatedIdentifierType="DOI" relationType="HasVersion">10.5281/ZENODO.
↪832053</relatedIdentifier>
```

IsVersionOf

Definition: indicates A is a version of B

Example and Usage Notes:

The registered resource is an instance of a target resource (indicates that A is an instance of B). It may be used, e.g., to relate a specific version of a software package to its software code repository.

```
<relatedIdentifier relatedIdentifierType="DOI" relationType="IsVersionOf">10.5281/ZENODO.
↪832054</relatedIdentifier>
```

IsNewVersionOf

Definition: indicates A is a new edition of B, where the new edition has been modified or updated

Example and Usage Notes:

```
<relatedIdentifier relatedIdentifierType="DOI" relationType="IsNewVersionOf">10.5438/0005
↪</relatedIdentifier>
```

IsPreviousVersionOf

Definition: indicates A is a previous edition of B

Example and Usage Notes:

```
<relatedIdentifier relatedIdentifierType="DOI" relationType="IsPreviousVersionOf">10.
↪5438/0007</relatedIdentifier>
```

IsPartOf

Definition: indicates A is a portion of B; may be used for elements of a series

Example and Usage Notes:

Recommended for discovery.

Primarily this relation is applied to container-contained type relationships.

May be used for individual software modules; note that code repository-to-version relationships should be modeled using IsVersionOf and HasVersion

```
<relatedIdentifier relatedIdentifierType="DOI" relationType="IsPartOf">10.5281/zenodo.
↪754312</relatedIdentifier>
```

HasPart

Definition: indicates A includes the part B

Example and Usage Notes:

Recommended for discovery.

Primarily this relation is applied to container-contained type relationships.

May be used for individual software modules; note that code repository-to-version relationships should be modeled using IsVersionOf and HasVersion

```
<relatedIdentifier relatedIdentifierType="URL" relationType="HasPart">https://zenodo.org/
↪record/16564/files/dune-stuff-LSSC_15.zip</relatedIdentifier>
```

IsPublishedIn

Definition: indicates A is published inside B, but is independent of other things published inside of B

Example and Usage Notes:

```
<relatedIdentifier relatedIdentifierType="ISSN" relationType="IsPublishedIn">2213-1337</
↪relatedIdentifier>
```

IsReferencedBy

Definition: indicates A is used as a source of information by B

Example and Usage Notes:

Recommended for discovery.

```
<relatedIdentifier relatedIdentifierType="URL" relationType="IsReferencedBy">http://www.
↪testpubl.de</relatedIdentifier>
```

References

Definition: indicates B is used as a source of information for A

Example and Usage Notes:

Recommended for discovery.

```
<relatedIdentifier relatedIdentifierType="URN" relationType="References">
↪urn:nbn:de:bsz:21-opus-963</relatedIdentifier>
```

IsDocumentedBy

Definition: indicates B is documentation about/explaining A

Example and Usage Notes:

May be used for software documentation.

```
<relatedIdentifier relatedIdentifierType="URL" relationType="IsDocumentedBy">http://
↪tobias-lib.uni-tuebingen.de/volltexte/2000/96/</relatedIdentifier>
```

Documents

Definition: indicates A is documentation about/explaining B

Example and Usage Notes:

May be used for software documentation.

```
<relatedIdentifier relatedIdentifierType="DOI" relationType="Documents">10.1234/7836</
↪relatedIdentifier>
```

IsCompiledBy

Definition: indicates B is used to compile or create A

Example and Usage Notes:

May be used to indicate either a traditional text compilation, or the compiler program used to generate executable software.

```
<relatedIdentifier relatedIdentifierType="URL" relationType="IsCompiledBy">http://d-nb.
↪info/gnd/4513749-3</relatedIdentifier>
```

Compiles

Definition: indicates B is the result of a compile or creation event using A

Example and Usage Notes:

May be used for software and text, as a compiler can be a computer program or a person.

```
<relatedIdentifier relatedIdentifierType="URN" relationType="Compiles">urn:nbn:de:bsz:21-
↪opus-963</relatedIdentifier>
```

IsVariantFormOf

Definition: indicates A is a variant or different form of B

Example and Usage Notes:

Use for a different form of one thing.

May be used for different software operating systems or compiler formats, for example.

```
<relatedIdentifier relatedIdentifierType="DOI" relationType="IsVariantFormOf">10.1234/
↪8675</relatedIdentifier>
```

IsOriginalFormOf

Definition: indicates A is the original form of B

Example and Usage Notes:

May be used for different software operating systems or compiler formats, for example.

```
<relatedIdentifier relatedIdentifierType="DOI" relationType="IsOriginalFormOf">10.1234/
↪9035</relatedIdentifier>
```

IsIdenticalTo

Definition: indicates that A is identical to B, for use when there is a need to register two separate instances of the same resource

Example and Usage Notes:

IsIdenticalTo should be used for a resource that is the same as the registered resource but is saved on another location, maybe another institution.

```
<relatedIdentifier relatedIdentifierType="URL" relationType="IsIdenticalTo">http://oac.
↪cdlib.org/findaid/ark:/13030/c8r78fzq</relatedIdentifier>
```

IsReviewedBy

Definition: indicates that A is reviewed by B

Example and Usage Notes:

```
<relatedIdentifier relatedIdentifierType="DOI" relationType="IsReviewedBy">10.5256/
↪F1000RESEARCH.4288.R4745</relatedIdentifier>
```

Reviews

Definition: indicates that A is a review of B

Example and Usage Notes:

```
<relatedIdentifier relatedIdentifierType="DOI" relationType="Reviews">10.12688/
↪f1000research.4001.1</relatedIdentifier>
```

IsDerivedFrom

Definition: indicates B is a source upon which A is based

Example and Usage Notes:

IsDerivedFrom should be used for a resource that is a derivative of an original resource.

In this example, the dataset is derived from a larger dataset and data values have been manipulated from their original state.

```
<relatedIdentifier relatedIdentifierType="DOI" relationType="IsDerivedFrom">10.6078/
↪M7DZ067C</relatedIdentifier>
```

IsSourceOf

Definition: indicates A is a source upon which B is based

Example and Usage Notes:

IsSourceOf is the original resource from which a derivative resource was created.

In this example, this is the original dataset without value manipulation.

```
<relatedIdentifier relatedIdentifierType="URL" relationType="IsSourceOf">http://
↪opencontext.org/projects/81204AF8-127C-4686-E9B0-1202C3A47959</relatedIdentifier>
```

IsRequiredBy

Definition: Indicates A is required by B

Example and Usage Notes:

May be used to indicate software dependencies.

```
<relatedIdentifier relatedIdentifierType="DOI" relationType="IsRequiredBy">10.1234/8675</
↪relatedIdentifier>
```

Requires

Definition: Indicates A requires B

Example and Usage Notes:

May be used to indicate software dependencies.

```
<relatedIdentifier relatedIdentifierType="DOI" relationType="Requires">10.1234/867</
↪relatedIdentifier>
```

Obsoletes

Definition: Indicates A replaces B

Example and Usage Notes:

```
<relatedIdentifier relatedIdentifierType="DOI" relationType="Obsoletes">10.5438/0007</
↪relatedIdentifier>
```

IsObsoletedBy

Definition: Indicates A is replaced by B

Example and Usage Notes:

```
<relatedIdentifier relatedIdentifierType="DOI" relationType="IsObsoletedBy">10.5438/0005
↪</relatedIdentifier>
```

IsCollectedBy

Definition: Indicates A is collected by B

Example and Usage Notes:

May be used to indicate the relationship between a dataset and an instrument that is used to collect, measure, obtain, or observe data (as in, dataset A is IsCollectedBy instrument B).

```
<relatedIdentifier relatedIdentifierType="DOI" relationType="IsCollectedBy">10.5072/
↪instrument</relatedIdentifier>
```

Collects

Definition: Indicates A collects B

Example and Usage Notes:

May be used to indicate the relationship between an instrument and where it has been used for to collect, measure, obtain, or observe data (as in, instrument A collects dataset B).

```
<relatedIdentifier relatedIdentifierType="DOI"relationType="Collects">10.5072/data</
↪relatedIdentifier>
```

descriptionType

Used by:

- *17.a descriptionType*

Options:

- *Abstract*
- *Methods*
- *SeriesInformation*
- *TableOfContents*
- *TechnicalInfo*
- *Other*

Abstract

Definition: A brief description of the resource and the context in which the resource was created.

Usage Notes: *Recommended for discovery.* Use "
" to indicate a line break for improved rendering of multiple paragraphs, but otherwise no html markup.

Example: https://data.datacite.org/application/vnd.datacite.datacite+xml/10.1594/PANGAEA.771774

Methods

Definition: The methodology employed for the study or research.

Usage Notes: *Recommended for discovery.* Full documentation about methods supports open science.

Example: https://data.datacite.org/application/vnd.datacite.datacite+xml/10.6078/D1K01X

SeriesInformation

Definition: Information about a repeating series, such as volume, issue, number.

Usage Notes: The information previously encoded as a description with this type should now be explicitly provided in tagged fields using the new *20. RelatedItem* property with relationType "IsPublishedIn" selected.

TableOfContents

Definition: A listing of the Table of Contents.

Usage Notes: Use "
" to indicate a line break for improved rendering of multiple paragraphs, but otherwise no html markup.

Example: https://data.datacite.org/application/vnd.datacite.datacite+xml/10.5678/LCRS/FOR816.CIT.1031

TechnicalInfo

Definition: Detailed information that may be associated with design, implementation, operation, use, and/or maintenance of a process, system, or instrument.

Usage Notes: For software description, this may include the contents of a "readme.txt" and necessary environmental information (hardware, operational software, applications/programs with version information, a human-readable synopsis of software purpose) that cannot be described using other properties (e.g., programming language). For other uses, this can include specific and detailed information as necessary and appropriate.

Other

Definition: Other description information that does not fit into an existing category.

Usage Notes: Use for any other description type.

Appendix 2: Earlier Version Update Notes

Appendix 2 provides the update contents of earlier versions of the schema.

Version 4.4 Update

- Addition of the new subproperty *6.d classificationCode* in the *6. Subject* property.
- Addition of new values to the *10.a resourceTypeGeneral* property:
- *Book*
- *BookChapter*
- *ComputationalNotebook*
- *ConferencePaper*
- *ConferenceProceeding*
- *Dissertation*
- *Journal*
- *JournalArticle*
- *OutputManagementPlan*
- *PeerReview*
- *Preprint*
- *Report*
- *Standard*
- Addition of a new *relationType*: *IsPublishedIn* (indicates that A is published in B)
- Addition of a new *20. RelatedItem* property, with subproperties to contain specific details for containing publication information previously encoded in a *17. Description* field with `descriptionType="SeriesInformation"` (for example, to define the journal name, volume, and page number for an article resource). Subproperties:
- *20.b relationType*
- *20.a relatedItemType*
- *20.1 relatedItemIdentifier*
- *20.1.a relatedItemIdentifierType*

- *20.2 creator*
- *20.3 title*
- *20.4 publicationYear*
- *20.5 volume*
- *20.6 issue*
- *20.7 number*
- *20.8 firstPage*
- *20.9 lastPage*
- *20.10 publisher*
- *20.11 edition*
- *20.12 contributor*

Major Documentation changes:

- The title of this document has changed to: *DataCite Metadata Schema Documentation for the Publication and Citation for Research Data and Other Research Outputs*.
- Following community feedback and suggestions, this version includes further clarification as regards the following *contributorTypes*: *DataManager*, *DataCurator*, *ResearchGroup*, and *HostingInstitution*.

Version 4.3 Update

Version 4.3 of the schema includes these changes:

- Addition of new subproperties for affiliation (*2.5*, *7.5*) in the *2. Creator* and *7. Contributor* properties:
  - affiliationIdentifier (*2.5.a*, *7.5.a*)
  - affiliationIdentifierScheme (*2.5.b*, *7.5.b*)
  - schemeURI (*2.5.c*, *7.5.c*)
- Addition of a new subproperty *19.2.b schemeURI* for *19.2 funderIdentifier* of the *19. FundingReference* property.
- Addition of "ROR" to the controlled list values of *19.2.a funderIdentifierType* of the *19. FundingReference* property.

Version 4.3 of the documentation includes these changes:

- Addition of "ROR" and "GRID" as examples of nameIdentifierScheme (*2.4.a*, *7.4.a*) and schemeURI (*2.4.b*, *7.4.b*) of the properties *2. Creator* and *7. Contributor*.
- Addition of a usage note to the affiliation (*2.5*, *7.5*) subproperty of *2. Creator* and *7. Contributor*.

- Addition of a note to the *8. Date* property and *8.b dateInformation* subproperty on the use of dates in ancient history.
- Broadening of the description of *dateType Created* with dates in ancient history (see *Appendix 1: Controlled List Definitions - dateType*)
- Amendment of the hierarchical numbering of the metadata properties to align with the schema XSD.
- Removal of brackets in the guidance regarding unknown values.

Version 4.2 Update

Version 4.2 of the schema includes these changes:

- Addition of new *dateType Withdrawn*
- Addition of new *relationType* pair: *IsObsoletedBy* and *Obsoletes*
- Addition of new *relatedIdentifierType w3id*
- Addition of new subproperties for *16. Rights*:
  - *16.b rightsIdentifier*
  - *16.c rightsIdentifierScheme*
  - *16.d schemeURI*
- Addition of the XML language attribute to the properties *2. Creator*, *7. Contributor* and *4. Publisher* for organizational names.

Version 4.2 of the documentation includes these changes:

- Addition of "data management plan" and "conference paper" as examples to the description of *resourceTypeGeneral Text* (see *Appendix 1: Controlled List Definitions - resourceTypeGeneral*).
- Addition of a usage note to the *relationType* pair *Compiles*/*IsCompiledBy* (see *Appendix 1: Controlled List Definitions - relatedIdentifierType*).
- Addition of a reference to the DataCite Event Data service to the description of the *12. RelatedIdentifier* property.
- Addition of subproperty *12.f resourceTypeGeneral* to *12. RelatedIdentifier*.
- Notes on the coverage and scope of the metadata schema, and the preferred language in which the metadata should be provided.

Version 4.1 Update

Version 4.1 of the schema includes these changes:

- Allowing multiple polygons per *18. GeoLocation*
- Addition of new optional subproperties for polygon
  - *18.4.2 inPolygonPoint*
- Addition of new *dateType* "Other"
- Addition of new subproperty for *8. Date*
  - *8.b dateInformation*
- Addition of a new resourceType *DataPaper*
- Addition of three new *relationType* pairs:
  - *IsDescribedBy* and *Describes*
  - *HasVersion* and *IsVersionOf*
  - *IsRequiredBy* and *Requires*
- Addition of a new optional attribute for *2.1 creatorName* and *7.1 contributorName*:
  - nameType (*2.1.a*, *7.1.a*). Controlled list: personal, organizational
- Addition of a new optional attribute for *12. RelatedIdentifier*
  - *12.f resourceTypeGeneral*. Controlled list is identical to existing *10.a resourceTypeGeneral* attribute
- Addition of optional lang attribute to *16. Rights* property

Version 4.1 of the documentation includes these changes:

- Change to the definition of *Collection* to encompass collections of one resourceType as well as those of mixed types.
- Inclusion of a reference to the Research Data Alliance (RDA)-recommended dynamic data citation approach in documentation in *section 2.2, Citation*.
- Change to the definition and examples of *13. Size* property to include duration as well as extent.
- Correction of the hierarchy of elements for *2. Creator* and *7. Contributor*.
- To enhance support for software citation, addition of 2 new appendices: one with a list of all the changes and explanatory notes (*Support for software citation*); and one with Force11 mappings (*FORCE11 Software Citation Principles Mapping*)
- Changes and additions to these definitions, in support of software citation:
  - *1. Identifier*
  - *3. Title*
  - *4. Publisher*

- *7. Contributor*
- *5. PublicationYear*
- *10.a resourceTypeGeneral* (*Service*, *Software*)
- *relationType* pairs (*IsPartOf*, *HasPart*, *IsDocumentedBy*, *Documents*, *IsVariantFormOf*, *IsOriginalFormOf*)
- *15. Version*
- *16. Rights*
- *17. Description* (*TechnicalInfo*)

Version 4.0 Update

Version 4.0 of the schema includes these changes:

- Allowing more than one nameIdentifier (*2.4*, *7.4*) per *2. Creator* or *7. Contributor*
- Addition of new optional subproperties for *2.1 creatorName* and *7.1 contributorName*:
  - givenName (*2.2*, *7.2*)
  - familyName (*2.3*, *7.3*)
- Addition of new *3.a titleType* "Other"
- Addition of new subproperty for *6.a subjectScheme*:
  - *6.a subjectScheme*:
    - *6.c valueURI*
- Changing *10.a resourceTypeGeneral* from optional to mandatory
- Addition of a new *relatedIdentifierType* option *IGSN*
- Addition of a new *descriptionType TechnicalInfo*
- Addition of a new subproperty for *18. GeoLocation*: *18.4 geoLocationPolygon*
- Changing the definition of the existing *18. GeoLocation* sub properties (*18.1 geoLocationPoint*, and *18.2 geoLocationBox*)
- Addition of a new property: *19. FundingReference*, with subproperties
  - *19.1 funderName*
  - *19.2 funderIdentifier*
    - *19.2.a funderIdentifierType*
  - *19.3 awardNumber*
  - *19.3.a awardURI*
  - *19.4 awardTitle*

- Deprecation of *contributorType* "funder" (as a result of adding the new property *19. FundingReference*)

Version 4.0 of the documentation includes these changes:

- Provision of a link to guidelines for how to write the ORCID ID (See properties *2.2.1* and *7.3.1* nameIdentifierScheme)
- Adjustment of the instructions for *resourceTypeGeneral* option *Collection* (See *Appendix 1: Controlled List Definitions - resourceTypeGeneral*)

Note that, while the property *10. ResourceType* has been relocated in the documentation to the mandatory property section, it retains its original numbering (10).

Version 3.1 Update

Version 3.1 of the schema includes these changes:

- New affiliation attribute (*2.4*, *7.4*) for *2. Creator* and *7. Contributor*
- New *relationType* pairs
  - *IsReviewedBy* and *Reviews*
  - *IsDerivedFrom* and *IsSourceOf*
- New *contributorType*: *DataCurator*
- New *relatedIdentifierTypes*:
  - *arXiv*
  - *bibcode*

Version 3.1 of the documentation includes these changes:

- Documentation for the new affiliation attributes (*2.4*, *7.4*) for *2. Creator* and *7. Contributor*
- Special notes about support for long lists of names (*2. Creator* and *7. Contributor*)
- Additional guidance for:
  - Recording *5. PublicationYear*
  - Handling the *digitised version of physical object*
  - Handling missing mandatory property values, including standard values table (*Appendix 3: Standard values for unknown information*)
- Documentation for the new *contributorType*: *DataCurator*
- Documentation for the two new *relatedIdentifierTypes*:
  - *arXiv*
  - *bibcode*
- Documentation, including examples, for the new *relationType* pairs:

  - *IsReviewedBy* and *Reviews*
  - *IsDerivedFrom* and *IsSourceOf*
- Correction of link errors in 3.0 documentation

Version 3.0 Update

Version 3.0 of the DataCite Metadata Schema included these changes[9].

- Correction of a problem with our way of depicting dates by
  - implementing RKMS-ISO8601[10] standard for depicting date ranges, so that a range is indicated as follows: 2004-03-02/2005-06-02
  - deleting `startDate` and `endDate` date types, and derogating these from earlier versions
- Addition of a new *18. GeoLocation* property, with the sub-properties *18.1 geoLocationPoint*, *18.2 geoLocationBox*, *18.3 geoLocationPlace* supporting a simple depiction of geospatial information, as well as a free text description.
- Addition of new values to controlled lists:
  - *contributorType*: *ResearchGroup* and *Other*
  - *dateType*: *Collected*
  - *resourceTypeGeneral* : *Audiovisual*, *Workflow*, and *Other* and derogation of Film
  - *relatedIdentifierType*: *PMID*
  - *relationType*: *IsIdenticalTo* (indicates that A is identical to B, for use when there is a need to register two separate instances of the same resource)
  - *relationType*: *HasMetadata*, (indicates resource A has additional metadata B and indicates), *IsMetadataFor* (indicates additional metadata A for resource B)
  - *descriptionType*: *Methods*
- Deletion of the derogated resourceType: film
- New sub-properties for *12.b relationType*: *12.c relatedMetadataScheme*, *12.d schemeURI* and *12.e schemeType*, to be used only for the new *relationType* pair of *HasMetadata*, *IsMetadataFor*
- Addition of schemeURI (*2.4.b*, *7.4.b*, *6.b*) sub-property to the nameIdentifierScheme (*2.4.a*, *7.4.a*, *6.a*) associated with *2.1 creatorName*, *7.1 contributorName* and *6. Subject*
- Addition of the *16.a rightsURI* sub-property to *16. Rights*; *16. Rights* is now repeatable (within wrapper element `rightsList`).
- Implementation of the xml:lang attribute[11] that can be used on the properties *3. Title*, *6. Subject* and *17. Description*.

[9] Two additional schema code level changes are the allowance of keeping optional wrapper elements empty and the allowance of arbitrary ordering of elements (by removal of <xs:sequence>).
[10] The standard is documented here: http://www.ukoln.ac.uk/metadata/dcmi/collection-RKMS-ISO8601/
[11] Allowed values IETF BCP 47, ISO 639-1 language codes, e.g. en, de, fr

- Removal of two system-generated administrative metadata fields: `LastMetadataUpdate` and `MetadataVersionNumber` because both values are tracked in another way now.

Version 3.0 of the DataCite Metadata Schema documentation included these changes:

- Updates to the introductory information
- Provision of greater detail, explanatory material and definitions for controlled lists
- Indication of recommended metadata, in addition to mandatory and optional
- Addition of more and more varied XML examples on the Metadata Schema website
- Removal from documentation of information about administrative metadata (which cannot be edited by contributors).

Version 2.2 Update

Version 2.2 of the DataCite Metadata Schema introduced several changes, as noted below:

- Addition of *URL* to list of allowed values for *relatedIdentifierType*
- Addition of the following values to list of allowed values for *contributorType*: *Producer*, *Distributor*, *RelatedPerson*, *Supervisor*, *Sponsor*, Funder, *RightsHolder*
- Addition of *SeriesInformation* to list of allowed values for *descriptionType*
- Addition of *Model* to list of allowed values for *resourceTypeGeneral*

Version 2.2 of the DataCite Metadata Schema documentation included these changes:

- Provision of more examples of xml for different types of resources
- Explanation of the *5. PublicationYear* property in consideration of the requirements of citation. A change to the definition of the *4. Publisher* property, which now reads, "The name of the entity that holds, archives, publishes, prints, distributes, releases, issues, or produces the resource. This property will be used to formulate the citation, so consider the prominence of the role."

Version 2.1 Update

Version 2.1 of the DataCite Metadata Schema introduced several changes, as noted below:

- Addition of a namespace (http://schema.datacite.org/namespace) to the schema in order to support OAI-PMH compatibility
- Enforcement of content for mandatory properties
- New type for the *8. Date* property to conform with the specification that it handles both YYYY and YYYY-MM-DD values

Version 2.1 of the DataCite Metadata Schema documentation included these changes:

- Addition of a column to the Mandatory and Optional Properties tables providing an indicator of whether the property being described is an attribute or a child of the corresponding property that has preceded it
- Revision of the allowed values description for the attribute 12.2 `relationType`. These have been reviewed and rewritten for increased clarity. In several cases, corrections to the definitions occurred.

Appendix 3: Standard values for unknown information

Appendix 3 provides a set of standard values that may be used when mandatory property values are not available for various reasons.

Examples of usage:

```
<creatorName>:unkn</creatorName>
```

```
<title>:unas</title>
```

```
<publisher>:null</publisher>
```

Table 3: Standard values for unknown information

Code	Definition
:unac	temporarily inaccessible
:unal	unallowed, suppressed intentionally
:unap	not applicable, makes no sense
:unas	value unassigned (e.g., Untitled)
:unav	value unavailable, possibly unknown
:unkn	known to be unknown (e.g., Anonymous, Inconnue)
:none	never had a value, never will
:null	explicitly and meaningfully empty
:tba	to be assigned or announced later
:etal	too numerous to list (et alia)

1.4 Mappings

This section contains mappings from the DataCite Metadata Schema to other metadata standards and schemas.

DataCite to Dublin Core Mapping 4.5

These mappings can be used to convert records described following version 4.5 of the DataCite Metadata Schema into records that comply with the Dublin Core Metadata Initiative Schema.

DataCite to Dublin Core Qualified Mapping

This mapping can be used to convert records described following version 4.5 of the DataCite Metadata Schema into records that comply with the Dublin Core Metadata Initiative Schema.

Table 4: DataCite to Dublin Core Qualified Mapping

DataCite-Property	Dublin Core Qualified
1. Identifier	dc.identifier
1.a identifierType	–
2. Creator	dc.creator
2.1 creatorName	dc.creator
2.1.a nameType	–
2.2 givenName	–
2.3 familyName	–
2.4 nameIdentifier	dc.creator.pid
2.4.a nameIdentifierScheme	–
2.4.b schemeURI	–
2.5 affiliation	dc.contributor
2.5.a affiliationIdentifier	dc.contributor.pid
2.5.b affiliationIdentifierScheme	–
2.5.c schemeURI	–
3. Title Mapped by *3.a titleType*:	dc.title
• AlternativeTitle	dc.title.alternative
• Subtitle	dc.title[12]
• TranslatedTitle	dc.title.alternative
• Other	dc.title.alternative

DataCite-Property	Dublin Core Qualified
3.a titleType	–
4. Publisher	dc.publisher
4.a publisherIdentifier	dc.publisher.pid
4.b publisherIdentifierScheme	–
4.c schemeURI	–
5. PublicationYear	dc.date.issued
6. Subject	dc.subject
6.a subjectScheme	–
6.b schemeURI	–
6.c valueURI	dc.subject.pid
6.d classificationCode	dc.subject
7. Contributor	dc.contributor
7.a contributorType	–
7.1 contributorName	dc.contributor
7.1.a nameType	–
7.2 givenName	–
7.3 familyName	–
7.4 nameIdentifier	dc.contributor.pid
7.4.a nameIdentifierScheme	–
7.4.b schemeURI	–
7.5 affiliation	dc.contributor
7.5.a affiliationIdentifier	dc.contributor.pid
7.5.b affiliationIdentifierScheme	–
7.5.c schemeURI	–
8. Date Mapped by *8.a dateType*:	dc.date
• *Accepted*	dc.date.accepted
• *Available*	dc.date.available
• *Copyrighted*	dc.date.copyrighted
• *Collected*	dc.date
• *Created*	dc.date.created

DataCite-Property	Dublin Core Qualified
• *Issued*	dc.date.issued
• *Submitted*	dc.date.submitted
• *Updated*	dc.date.modified
• *Valid*	dc.date.valid
• *Withdrawn*	dc.date
• *Other*	dc.date
8.a dateType	–
8.b dateInformation	dc.description
9. Language	dc.language
10. ResourceType	dc.type
10.a resourceTypeGeneral	dc.type
11. AlternateIdentifier	dc.identifier
11.a alternateIdentifierType	–
12. RelatedIdentifier Mapped by *12.b relationType*:	dc.relation
• *IsReferencedBy*	dc.relation.isReferencedBy
• *References*	dc.relation.references
• *IsVersionOf*	dc.relation.isVersionOf
• *HasVersion*	dc.relation.hasVersion
• *IsVariantFormOf*	dc.relation.isFormatOf

DataCite-Property	Dublin Core Qualified
• *IsPartOf*	dc.relation.isPartOf
• *HasPart*	dc.relation.hasPart
• *IsObsoletedBy*	dc.relation.isReplacedBy
• *Obsoletes*	dc.relation.replaces
• *IsDerivedFrom*	dc.source or dc.relation.source
• *Other relationTypes*	dc.relation
12.a relatedIdentifierType	–
12.b relationType	–
12.c relatedMetadataScheme	–
12.d schemeURI	–
12.e schemeType	–
12.f resourceTypeGeneral	–
13. Size	dc.format.extent
14. Format	dc.format
15. Version	dc.title[13]
16. Rights	dc.rights
16.a rightsURI	dc.rights.license
16.b rightsIdentifier	dc.rights
16.c rightsIdentifierScheme	–
16.d schemeURI	–
17. Description Mapped by *17.a descriptionType*:	dc.description
• *Abstract*	dc.description.abstract
• *Methods*	dc.description

DataCite-Property	Dublin Core Qualified
• *SeriesInformation*	dc.description
• *TechnicalInfo*	dc.description
• *TableOfContents*	dc.description.tableOfContents
• *Other*	dc.description
17.a descriptionType	–
18. GeoLocation	dc.coverage.spatial
18.1 geoLocationPoint	dc.coverage.spatial
18.1.1 pointLongitude	dc.coverage.spatial
18.1.2 pointLatitude	dc.coverage.spatial
18.2 geoLocationBox	dc.coverage.spatial
18.2.1 westBoundLongitude	dc.coverage.spatial
18.2.2 eastBoundLongitude	dc.coverage.spatial
18.2.3 southBoundLatitude	dc.coverage.spatial
18.2.4 northBoundLatitude	dc.coverage.spatial
18.3 geoLocationPlace	dc.coverage.spatial
18.4 geoLocationPolygon	dc.coverage.spatial
18.4.1 polygonPoint	dc.coverage.spatial
18.4.1.1 pointLongitude	dc.coverage.spatial
18.4.1.2 pointLatitude	dc.coverage.spatial
18.4.2 inPolygonPoint	dc.coverage.spatial
18.4.2.1 pointLongitude	dc.coverage.spatial
18.4.2.2 pointLatitude	dc.coverage.spatial
19. FundingReference	–
19.1 funderName	dc.contributor
19.2 funderIdentifier	dc.contributor.pid
19.2.a funderIdentifierType	–
19.2.b schemeURI	–
19.3 awardNumber	dc.relation
19.3.a awardURI	dc.relation.pid
19.4 awardTitle	dc.relation
20. RelatedItem Mapped by *20.b relationType* as above for *12. RelatedIdentifier*.	dc.relation[14]

DataCite-Property	Dublin Core Qualified
20.a relatedItemType	–
20.b relationType	–
20.1 relatedItemIdentifier	dc.relation
20.1.a relatedItemIdentifierType	–
20.2 creator	–
20.2.1 creatorName	–
20.3 title	–
20.3.a titleType	–
20.4 publicationYear	–
20.5 volume	–
20.6 issue	–
20.7 number	–
20.7.a numberType	–
20.8 firstPage	–
20.9 lastPage	–
20.10 publisher	–
20.11 edition	–
20.12 contributor	–
20.12.a contributorType	–
20.12.1 contributorName	–

DataCite - Dublin Core local extension

An example local extension to Dublin Core for DataCite metadata properties.

Table 5: DataCite - Dublin Core local extension

DataCite-Property	DataCite - Dublin Core local extension
1. Identifier	dc.identifier.doi
1.a identifierType	–
2. Creator	dc.creator
2.1 creatorName	dc.creator
2.1.a nameType	–
2.2 givenName	–
2.3 familyName	–
2.4 nameIdentifier	dc.creator.pid

[12] Subtitle may be combined with the main title, e.g., "Main title: subtitle", in dc.title.
[13] Version may be combined with the main title, e.g., "Main title (version)", in dc.title.
[14] For the details of the related item (Title, etc.), use dc.relation. Concatenate the content according to any preferred citation format.

DataCite-Property	DataCite - Dublin Core local extension
2.4.a nameIdentifierScheme	–
2.4.b schemeURI	–
2.5 affiliation	dc.creator.affiliation
2.5.a affiliationIdentifier	dc.creator.affiliation.pid
2.5.b affiliationIdentifierScheme	–
2.5.c schemeURI	–
3. Title Mapped by *3.a titleType*:	dc.title
• AlternativeTitle	dc.title.alternative
• Subtitle	dc.title.subtitle
• TranslatedTitle	dc.title.translatedTitle
• Other	dc.title.other
3.a titleType	–
4. Publisher	dc.publisher
4.a publisherIdentifier	dc.publisher.pid
4.b publisherIdentifierScheme	–
4.c schemeURI	–
5. PublicationYear	dc.date.issued
6. Subject	dc.subject
6.a subjectScheme	–
6.b schemeURI	–
6.c valueURI	dc.subject.pid
6.d classificationCode	dc.subject.classification
7. Contributor	dc.contributor.{contributorType}
7.a contributorType	–
7.1 contributorName	dc.contributor.{contributorType}
7.1.a nameType	–
7.2 givenName	–
7.3 familyName	–
7.4 nameIdentifier	dc.contributor.{contributorType}.pid
7.4.a nameIdentifierScheme	–
7.4.b schemeURI	–
7.5 affiliation	dc.contributor.{contributorType}.affiliation

DataCite-Property	DataCite - Dublin Core local extension
7.5.a affiliationIdentifier	dc.contributor.{contributorType}.affiliation.pid
7.5.b affiliationIdentifierScheme	–
7.5.c schemeURI	–
8. Date Mapped by *8.a dateType*:	dc.date
• *Accepted*	dc.date.accepted
• *Available*	dc.date.available
• *Copyrighted*	dc.date.copyrighted
• *Collected*	dc.date.collected
• *Created*	dc.date.created
• *Issued*	dc.date.issued
• *Submitted*	dc.date.submitted
• *Updated*	dc.date.modified
• *Valid*	dc.date.valid
• *Withdrawn*	dc.date.withdrawn
• *Other*	dc.date.other
8.a dateType	–
8.b dateInformation	dc.description
9. Language	dc.language
10. ResourceType	dc.type

DataCite-Property	DataCite - Dublin Core local extension
10.a resourceTypeGeneral	dc.type
11. AlternateIdentifier	dc.identifier.{alternateIdentifierType}
11.a alternateIdentifierType	–
12. RelatedIdentifier Mapped by *12.b relationType*:	dc.relation
• *IsReferencedBy*	dc.relation.isReferencedBy
• *References*	dc.relation.references
• *IsVersionOf*	dc.relation.isVersionOf
• *HasVersion*	dc.relation.hasVersion
• *IsVariantFormOf*	dc.relation.isFormatOf
• *IsPartOf*	dc.relation.isPartOf
• *HasPart*	dc.relation.hasPart
• *IsObsoletedBy*	dc.relation.isReplacedBy
• *Obsoletes*	dc.relation.replaces
• *IsDerivedFrom*	dc.source or dc.relation.source
• *Other relationTypes*	dc.relation.{relationType}
12.a relatedIdentifierType	–
12.b relationType	–
12.c relatedMetadataScheme	–
12.d schemeURI	–

DataCite-Property	DataCite - Dublin Core local extension
12.e schemeType	–
12.f resourceTypeGeneral	–
13. Size	dc.format.extent
14. Format	dc.format
15. Version	dc.description.version
16. Rights	dc.rights
16.a rightsURI	dc.rights.license
16.b rightsIdentifier	dc.rights
16.c rightsIdentifierScheme	–
16.d schemeURI	–
17. Description Mapped by *17.a descriptionType*:	dc.description
• *Abstract*	dc.description.abstract
• *Methods*	dc.description.methods
• *SeriesInformation*	dc.description.seriesInformation
• *TechnicalInfo*	dc.description.technicalINfo
• *TableOfContents*	dc.description.tableOfContents
• *Other*	dc.description.other
17.a descriptionType	–
18. GeoLocation	dc.coverage.spatial
18.1 geoLocationPoint	dc.coverage.spatial.point
18.1.1 pointLongitude	dc.coverage.spatial.point.longitude
18.1.2 pointLatitude	dc.coverage.spatial.point.latitude
18.2 geoLocationBox	dc.coverage.spatial.box
18.2.1 westBoundLongitude	dc.coverage.spatial.box.west
18.2.2 eastBoundLongitude	dc.coverage.spatial.box.east
18.2.3 southBoundLatitude	dc.coverage.spatial.box.south
18.2.4 northBoundLatitude	dc.coverage.spatial.box.north
18.3 geoLocationPlace	dc.coverage.spatial
18.4 geoLocationPolygon	dc.coverage.spatial.polygon

DataCite-Property	DataCite - Dublin Core local extension
18.4.1 polygonPoint	dc.coverage.spatial.polygon.polygonPoint
18.4.1.1 pointLongitude	dc.coverage.spatial.polygon.polygonPoint.longitude
18.4.1.2 pointLatitude	dc.coverage.spatial.polygon.polygonPoint.latitude
18.4.2 inPolygonPoint	dc.coverage.spatial.polygon.inPolygonPoint
18.4.2.1 pointLongitude	dc.coverage.spatial.polygon.inPolygonPoint.longitude
18.4.2.2 pointLatitude	dc.coverage.spatial.polygon.inPolygonPoint.latitude
19. FundingReference	dc.relation.fundingReference
19.1 funderName	dc.relation.fundingReference.funderName
19.2 funderIdentifier	dc.relation.fundingReference.pid
19.2.a funderIdentifierType	–
19.2.b schemeURI	–
19.3 awardNumber	dc.relation.fundingReference.awardNumber
19.3.a awardURI	dc.relation.awardNumber.pid
19.4 awardTitle	dc.relation.awardTitle
20. RelatedItem Mapped by *20.b relationType* as above for *12. RelatedIdentifier*.	dc.relation.{relationType}
20.a relatedItemType	–
20.b relationType	–
20.1 relatedItemIdentifier	dc.relation
20.1.a relatedItemIdentifierType	–
20.2 creator	dc.relation.{relationType}.creator
20.2.1 creatorName	dc.relation.{relationType}.creator
20.3 title	dc.relation.{relationType}.title
20.3.a titleType	–
20.4 publicationYear	dc.relation.{relationType}.publicationYear
20.5 volume	dc.relation.{relationType}.volume
20.6 issue	dc.relation.{relationType}.issue
20.7 number	dc.relation.{relationType}.number
20.7.a numberType	–
20.8 firstPage	dc.relation.{relationType}.firstPage
20.9 lastPage	dc.relation.{relationType}.lastPage
20.10 publisher	dc.relation.{relationType}.publisher
20.11 edition	dc.relation.{relationType}.edition
20.12 contributor	dc.relation.{relationType}.contributor.{contributorType}
20.12.a contributorType	–
20.12.1 contributorName	dc.relation.{relationType}.contributor.{contributorType}

The first mapping in *Table 4: DataCite to Dublin Core Qualified Mapping* can be used to convert records described following version 4.5 of the DataCite Metadata Schema into records that comply with the Dublin Core Metadata Initiative Schema.

The second mapping in *Table 5: DataCite - Dublin Core local extension* provides an example of a local

DataCite Dublin Core extension.

Both mappings make use of the "pid" attribute from the proposed Scholarly Resources Application Profile (SRAP).[15]

FORCE11 Software Citation Principles[16] Mapping

FORCE11 requirements:

- *Table 6: FORCE11 Software Citation Principles to DataCite Mapping*

Table 6: FORCE11 Software Citation Principles to DataCite Mapping

FORCE11 requirement	DataCite v. 4.1	Comments
Unique identifier – recommend a DOI	*1. Identifier* with *1.a identifierType* "DOI"	For software a decision may need to be made about whether the ID is for a specific version of a piece of software (recommended by FORCE11 Software Citation Principles), for a piece of software (i.e. all versions), or for the latest version.
Software name	*3. Title*	May be the title of a dataset or the name of a piece of software.
Author	*2. Creator*	May include those responsible for software creation.
Contributor	*7. Contributor*	For software, if there is an alternate entity that "holds, archives, publishes, prints, distributes, releases, issues, or produces the code, use the *7.a contributorType HostingInstitution* for the code repository.

[15] From the Dublin Core Metadata Initiative Scholarly Resources Application Profile (SRAP) proposal: "We do not propose any new properties for agent-specific identifiers, but rely on DCMI's draft proposal of using the XML `id` attribute to match identifiers with the agent names. However, we use attribute `pid` instead of `id`, since W3C `xml:id` proposal allows just one identifier per each element. In SRAP context, the same person or organization may have multiple unique identifiers."

[16] Smith AM, Katz DS, Niemeyer KE, FORCE11 Software Citation Working Group. (2016) Software citation principles. PeerJ Computer Science 2:e86 https://doi.org/10.7717/peerj-cs.86

FORCE11 requirement	DataCite v. 4.1	Comments
Contributor role	*7.a contributorType*	See Definition in *contributorType Appendix*: *Distributor*: Includes distribution of software. See Example for *HostingInstitution*: Includes software or run code repositories.
Version number	*15. Version*	See Version example: Software engineering practice follows this approach of tracking changes and giving new version numbers.
Release date	*5. PublicationYear*	See definition: In the case of resources such as software where there may be multiple releases in one year, other DataCite metadata or information such as the landing page should enable users to identify the newest one.
Location/repository	*4. Publisher* *7. Contributor* with *7.a contributorType HostingInstitution*	For software, use *4. Publisher* for Code Repository, following the data model. If there is an alternate entity that "holds, archives, publishes, prints, distributes, releases, issues, or produces" the code, use the *7.a contributorType HostingInstitution* for the code repository."
Indexed citations (and links between software versions)	*12. RelatedIdentifier* with *12.b relationType*	RelationTypes applicable to software.

FORCE11 requirement	DataCite v. 4.1	Comments
	HasVersion, *IsVersionOf*	*HasVersion*: The registered resource such as a software package or code repository has a versioned instance (indicates A has the instance B). It may, e.g., be used to relate an un- versioned code repository to one of its specific software versions. *IsVersionOf*: The registered resource is an instance of a target resource (indicates that A is an instance of B). It may, e.g., be used to relate a specific version of a software package to its software code repository.
	IsNewVersionOf, *IsPreviousVersionOf*	*IsNewVersionOf*: Can be used for "edition or software release etc." *IsPreviousVersionOf*: Can be used for "edition or software release etc."
	IsDerivedFrom, *IsSourceOf*	*IsDerivedFrom* and *IsSourceOf*: Can be used to denote software that is a fork of other software or is the origin of a fork.
	IsPartOf, *HasPart*	*IsPartOf* and *HasPart*: May be used for individual software modules.
	IsDocumentedBy, *Documents*	*IsDocumentedBy* and *Documents*: Points to software documentation.
	IsVariantFormOf, *IsOriginalFormOf*	*IsVariantFormOf* and *IsOriginalFormOf*: May be used for different software operating systems or compiler formats, for example. Indicates that A is a variant or different form or packaging of B.

FORCE11 requirement	DataCite v. 4.1	Comments
	IsRequiredBy, *Requires*	*IsRequiredBy*: The registered resource A is called by or is required by software resource B. *Requires*: The registered resource A calls or requires software resource B.
Software licenses	*16. Rights*	See example: May be used for software licenses.
Description	*17. Description* *17. Description* with *17.a descriptionType*: *TechnicalInfo* *17. Description* with *17.a descriptionType*: *Abstract*	*TechnicalInfo*: For software description, this may include a readme.text, and necessary environmental information (hardware, operational software, applications/programs) that cannot be described using other properties such as 'Format/version' or 'Description/summary'.
Keywords	*6. Subject*	Existing guidance applies: Subject, keyword, classification code, or key phrase describing the resource.

PIDINST Schema[17] Mapping

Table 7: PIDINST to DataCite Mapping

PIDINST Property	DataCite v. 4.5	Comments
Identifier	*1. Identifier*	
identifierType	*1.a identifierType* "DOI"	
Name	*3. Title*	May be the title of a dataset, the name of a piece of software or instrument.

[17] Krahl, R., Darroch, L., Huber, R., Devaraju, A., Klump, J., Habermann, T., Stocker, M., & The Research Data Alliance Persistent Identification of Instruments Working Group members (2022). Metadata Schema for the Persistent Identification of Instruments (1.0). Research Data Alliance. https://doi.org/10.15497/RDA00070

PIDINST Property	DataCite v. 4.5	Comments
Owner	*7. Contributor* with *7.a contributorType*: *HostingInstitution*	Can be used for the owner of an instrument, i.e. the institution responsible for the management of the instrument. This may include the legal owner, the operator, or an institute providing access to the instrument. Use the contributorType "hostingInstitution". The instrument owner may also be included in *4. Publisher*.[18]
ownerName	*7.1 contributorName*	
ownerIdentifier	*7.4 nameIdentifier*	
ownerIdentifierType	*7.4.a nameIdentifierScheme*	
Manufacturer	*2. Creator*	The instrument's manufacturer(s) or developer. This may also be the owner for custom-build instruments.
manufacturerName	*2.1 creatorName*	
manufacturerIdentifier	*2.4 nameIdentifier*	
manufacturerIdentifierType	*2.4.a nameIdentifierScheme*	
Model modelName modelIdentifier modelIdentifierType	*17. Description* with *17.a descriptionType*: *TechnicalInfo*	Detailed information associated with an instrument instance, e.g. model (model name and model identifier), instrument type (name and identifier), or measured variable.
Description	*17. Description* with *17.a descriptionType*: *Abstract*	Technical description of the device and its capabilities.
InstrumentType instrumentTypeName instrumentTypeIdentifier instrumentTypeIdentifierType	*17. Description* with *17.a descriptionType*: *TechnicalInfo*	

PIDINST Property	DataCite v. 4.5	Comments
MeasuredVariable	*17. Description* with *17.a descriptionType*: *TechnicalInfo*	The variable(s) that this instrument measures or observes.
Date	*8. Date*	Dates relevant to the instrument.
dateType	*8.a dateType*	To indicate the date when the instrument started to be in operation (Commissioned), or ceased to be in operation (De-Commissioned), use *8.a dateType* "Other" and add "Commissioned" resp. "Decommissioned" in *8.b dateInformation*.
RelatedIdentifier	*12. RelatedIdentifier*	
relatedIdentifierType	*12.a relatedIdentifierType*	
relationType	*12.b relationType*	RelationTypes applicable to instruments.
	Describes, *IsDescribedBy*	The linked resource is a document describing the instrument.
	IsNewVersionOf, *IsPreviousVersionOf*	If an instrument is substantially modified, a new DOI may be attributed to the new version. In that case the old and the new DOI should be linked to each other. IsNewVersionOf should be used in the new DOI record to link the old instrument before the modification.
	HasPart, *IsPartOf*	In the case of a complex instrument, having multiple components that may be considered as instruments in their own right, with their own DOIs, these DOIs should be linked. HasPart should be used in the DOI record of the compound instrument to link the components. IsPartOf should be used in the DOI records of the components to link the compound instrument.

PIDINST Property	DataCite v. 4.5	Comments
	HasMetadata, *IsMetadataFor*	If there is additional metadata describing the instrument, possibly using a community specific metadata standard, that metadata record may be linked using HasMetadata.
	Collects, *IsCollectedBy*	If the instrument has been used to collect data (e.g., to measure a physical quantity in some research activity), Collects may be used to link the instrument to the resulting dataset.
AlternateIdentifier	*11. AlternateIdentifier*	May be used for the instrument's serial number. Other possible uses include an owner's inventory number or an entry in some instrument database.
alternateIdentifierType	*11.a alternateIdentifierType*	The type of the AlternateIdentifier.

1.5 Guidance

Note: This guidance section—created by the Metadata Working Group—supplements the official schema documentation.

These recommendations are intended to assist users of the DataCite Metadata Schema with implementation.

Citation of dynamic datasets

For datasets that are continuously and rapidly updated, there are special challenges both in citation and preservation. For citation, four approaches are possible:

a) Cite a specific slice[19] or subset (the set of updates to the dataset made during a particular period of time or to a particular area of the dataset). Example:

[18] The *Appendix 3: Standard values for unknown information* values may also be used for *4. Publisher* (e.g., `:unap` for not applicable).

[19] Ball, A. & Duke, M. (2015, July 30). 'How to Cite Datasets and Link to Publications'. DCC How-to Guides. Edinburgh : Digital Curation Centre. Retrieved April 13, 2017, from: http://www.dcc.ac.uk/resources/how-guides/cite-datasets#sec:versions

- Data Request T.Jansen; SAHFOS; Work published 2014 via SAHFOS ; Area Def: 54-65°N, 0-45°W. Temporal Def: 1980-2012 (April-August) Taxonomic Def: All zooplankton; (dataset). https://doi.org/10.7487/2014.15.1.1

b) Cite a specific snap-shot[20] (a copy of the entire dataset made at a specific time). Example:

- König-Langlo, G., & Sieger, R. (2010). BSRN snapshot 2010-01 as ISO image file (3.75 GB) [Data set]. PANGAEA - Data Publisher for Earth & Environmental Science. (dataset). https://doi.org/10.1594/pangaea.833424

c) Cite the continuously updated dataset[21] but add an Access Date and Time to the citation. Example:

- Doe, J. and R. Roe. 2001. The FOO Data Set. Version 2.3. The FOO Data Center. (dataset). https://doi.org/10.xxxx/notfoo.547983. Accessed 1 May 2011.

d) Cite a query[22], time-stamped for re-execution against a versioned database. The RDA recommended citation for this approach is:

- R. Roe. 2017. "The Moo Data Query" created at 2017-07-21 10:25:30 PID https://doi.org/10.xxxx/notmoo.857988. Subset of Moo Database (dataset). PID https://doi.org/10.xxxx/bigmoo.360873.

Notes:

The "slice," "snap-shot" and "query" options require unique identifiers. Be aware that the third option (c) necessarily means that following the citation does not result in access to the resource as cited. This limits reproducibility of the work that uses this form of citation.

In addition, please note that access date and time may be combined with the first (a), second (b) and fourth (d) options, but it must be used with the third option (c).

The fourth option (d) may shift more work onto repositories to store database versions for all the queries, so not all repositories will be able to support this alternative.

Support for software citation

This page provides a quick reference guide for all the 4.1 version changes in support of software citation.

[20] Ball, A. & Duke, M. (2015, July 30). 'How to Cite Datasets and Link to Publications'. DCC How-to Guides. Edinburgh : Digital Curation Centre. Retrieved April 13, 2017, from: http://www.dcc.ac.uk/resources/how-guides/cite-datasets#sec:versions

[21] Ball, A. & Duke, M. (2015, July 30). 'How to Cite Datasets and Link to Publications'. DCC How-to Guides. Edinburgh : Digital Curation Centre. Retrieved April 13, 2017, from: http://www.dcc.ac.uk/resources/how-guides/cite-datasets#sec:versions

[22] Rauber, A., Uytvanck, D. V., Asmi, A., & Proll, S. (2016, February 09). Identification of Reproducible Subsets for Data Citation, Sharing and Re-Use. Retrieved April 13, 2017, from https://www.rd-alliance.org/system/files/documents/TCDL-RDA-Guidelines_160411.pdf

Documentation updates

Property	Change to the documentation
1. Identifier	Add: "For software, a decision may need to be made about whether the ID is for a specific version of a piece of software (recommended by Force11 Software Citation Principles), *for a piece of software i.e. all versions or for the latest version.*"
3. Title	Add: "May be the title of a dataset or the name of a piece of software."
4. Publisher	Add: "For software, use Publisher for Code Repository, following the data model. If there is an alternate entity that "holds, archives, publishes, prints, distributes, releases, issues, or produces" the code, use the contributorType "hostingInstitution" for the code repository."
7. Contributor	Add: "For software, if there is an alternate entity that "holds, archives, publishes, prints, distributes, releases, issues, or produces" the code, use the contributorType "hostingInstitution" for the code repository."
5. PublicationYear	Add: "In the case of resources such as software where there may be multiple releases in one year, other DataCite metadata or information such as the landing page should enable users to identify the newest one."
10.a resourceTypeGeneral	New definition for *Service*: "An organized system of apparatus, appliances, staff, etc., for supplying some function(s) required by end users." New example language for *Service*: "Data management service, *or long-term preservation service.*" New definition for *Software*: "A computer program in source code (text) or compiled form. *Use this type for all software components supporting scholarly research.*" New example language for *Software*: "Software supporting *scholarly* research."

Property	Change to the documentation
12.b relationType	Changes to Example and Usage Notes in the *relationType Appendix*: *IsPartOf* and *HasPart*: may be used for individual software modules; note that code repository-to-*version* relationships should be modeled using IsVersionOf and HasVersion *IsDocumentedBy* and *Documents*: e.g. points to software documentation *IsVariantFormOf* and *IsOriginalFormOf*: May be used for different software operating systems or compiler formats, for example.
15. Version	Add to Example: "Software engineering practice follows this approach of tracking changes and giving new version numbers."
16. Rights	Add: "May be used for software licenses."
17. Description	Change definition of *TechnicalInfo*: "For software description, this may include a readme.txt, and necessary environmental *information (hardware, operational software, applications/programs with version information, a human-readable synopsis of software purpose) that cannot be described using other properties (e.g. Language (software))*. For other uses, this can include specific and detailed information as necessary and appropriate."

Changes to the schema

- New relationType pair (*HasVersion*, *IsVersionOf*)
  - *HasVersion*: The registered resource such as a software package or code repository has a versioned instance (indicates A has the instance B) e.g. it may be used to relate an unversioned code repository to one of its specific software versions.
  - *IsVersionOf*: The registered resource is an instance of a target resource (indicates that A is an instance of B) e.g. it may be used to relate a specific version of a software package to its software code repository.
- New relationType pair (*IsRequiredBy*, *Requires*)
  - *IsRequiredBy*: The registered resource such as a software package (A) is required by an identified external resource (B). This may be used to indicate software dependencies.
  - *Requires*: The registered resource such as a software package (A) requires an identified

external resource (B). This may be used to indicate software dependencies.

Using RelatedItem for publication information and related resources

The *20. RelatedItem* property was developed to satisfy two distinct use cases.

The first use case is **providing publication information** for journal articles, book chapters, and other resources that are published within another item. This information about the related item (the container) is needed to formulate a complete citation of the primary resource being described. For example, a book title is necessary to cite a book chapter, and a journal title and volume/issue number are necessary to cite a journal article.

The second use case is **providing information about related resources.**

- When a related resource *does not have an identifier*, the *20. RelatedItem* property should be used to provide information about the related resource.
- When a related resource *has an identifier*, the *12. RelatedIdentifier* property should *always* be used. In addition, the *20. RelatedItem* property may *optionally* be used to provide information about the related resource.

Contents

Use case: Providing publication information for journal articles, book chapters, and more

The RelatedItem property with relationType *IsPublishedIn* can be used to provide more complete publication for journal articles, book chapters, and other components of larger resources.

With the *IsPublishedIn* relationType, the following optional sub-properties may be used:

- *20.5 volume*
- *20.6 issue*
- *20.7 number*

- *20.8 firstPage*
- *20.9 lastPage*
- *20.11 edition*

The related item that the resource is published in may have an identifier of this own. When the related item has an identifier, it may be included in the *20.1 relatedItemIdentifier* attribute. In addition, the *12. RelatedIdentifier* property should also be supplied.

Example: Journal article in a journal (with an ISSN)

XML

```
<?xml version="1.0" encoding="UTF-8"?>
<resource
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns="http://datacite.org/schema/kernel-4" xsi:schemaLocation="http://datacite.org/
↪schema/kernel-4 http://schema.datacite.org/meta/kernel-4.5/metadata.xsd">
  <identifier identifierType="DOI">10.21384/ExampleArticle</identifier>
  <creators>
    <creator>
      <creatorName nameType="Personal">Garcia, Sofia</creatorName>
      <givenName>Sofia</givenName>
      <familyName>Garcia</familyName>
      <nameIdentifier schemeURI="https://orcid.org/" nameIdentifierScheme="ORCID">0000-
↪0001-5727-2427</nameIdentifier>
      <affiliation affiliationIdentifier="https://ror.org/03efmqc40"␣
↪affiiationIdentifierScheme="ROR" SchemeURI="https://ror.org">Arizona State University</
↪affiliation>
    </creator>
  </creators>
  <titles>
    <title xml:lang="en">Example Article Title</title>
  </titles>
  <publisher xml:lang="en">Example Publisher</publisher>
  <publicationYear>2022</publicationYear>
  <resourceType resourceTypeGeneral="JournalArticle"></resourceType>
  <relatedIdentifiers>
    <relatedIdentifier relatedIdentifierType="ISSN" relationType="IsPublishedIn">1234-
↪5678</relatedIdentifier>
  </relatedIdentifiers>
  <relatedItems>
    <relatedItem relationType="IsPublishedIn" relatedItemType="Journal">
      <relatedItemIdentifier relatedItemIdentifierType="ISSN">1234-5678</
↪relatedItemIdentifier>
      <titles>
        <title>Journal of Metadata Examples</title>
      </titles>
      <publicationYear>2022</publicationYear>
      <volume>3</volume>
```

(continues on next page)

(continued from previous page)

```
      <issue>4</issue>
      <firstPage>20</firstPage>
      <lastPage>35</lastPage>
      <publisher>Example Publisher</publisher>
    </relatedItem>
  </relatedItems>
</resource>
```

JSON

```
{
  "data": {
      "type": "dois",
      "attributes": {
          "url": "https://example.org/RelatedItem1",
          "prefix": "10.21384/ExampleArticle",
          "creators": [
              {
                  "name": "Garcia, Sofia",
                  "nameType": "Personal",
                  "givenName": "Sofia",
                  "familyName": "Garcia",
                  "affiliation": [
                      {
                          "name": "Arizona State University",
                          "schemeUri": "https://ror.org",
                          "affiliationIdentifier": "https://ror.org/03efmqc40"
                      }
                  ],
                  "nameIdentifiers": [
                      {
                          "schemeUri": "https://orcid.org",
                          "nameIdentifier": "https://orcid.org/0000-0001-5727-2427",
                          "nameIdentifierScheme": "ORCID"
                      }
                  ]
              }
          ],
          "titles": [
              {
                  "lang": "en",
                  "title": "Example Article Title"
              }
          ],
          "publisher": "Example Publisher",
          "publicationYear": 2022,
          "types": {
              "resourceTypeGeneral": "JournalArticle"
          },
```

(continues on next page)

(continued from previous page)

```
          "relatedIdentifiers": [
              {
                  "relationType": "IsPublishedIn",
                  "relatedIdentifier": "1234-5678",
                  "relatedIdentifierType": "ISSN"
              }
          ],
          "relatedItems": [
              {
                  "issue": "4",
                  "titles": [
                      {
                          "title": "Journal of Metadata Examples"
                      }
                  ],
                  "volume": "3",
                  "lastPage": "35",
                  "firstPage": "20",
                  "publisher": "Example Publisher",
                  "relationType": "IsPublishedIn",
                  "publicationYear": "2022",
                  "relatedItemType": "Journal",
                  "relatedItemIdentifier": {
                      "relatedItemIdentifier": "1234-5678",
                      "relatedItemIdentifierType": "ISSN"
                  }
              }
          ]
      }
  }
}
```

Example: Digitized book chapter in a book (with no identifier)

XML

```
<?xml version="1.0" encoding="UTF-8"?>
<resource
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns="http://datacite.org/schema/kernel-4" xsi:schemaLocation="http://datacite.org/
↪schema/kernel-4 http://schema.datacite.org/meta/kernel-4.5/metadata.xsd">
  <identifier identifierType="DOI">10.21384/ExampleBookChapter</identifier>
  <creators>
    <creator>
      <creatorName nameType="Personal">Garcia, Sofia</creatorName>
      <givenName>Sofia</givenName>
      <familyName>Garcia</familyName>
    </creator>
  </creators>
```

(continues on next page)

(continued from previous page)

```
  <titles>
    <title xml:lang="en">Example Chapter Title</title>
  </titles>
  <publisher xml:lang="en">Example Publisher</publisher>
  <publicationYear>1980</publicationYear>
  <resourceType resourceTypeGeneral="BookChapter"></resourceType>
  <relatedItems>
    <relatedItem relationType="IsPublishedIn" relatedItemType="Book">
      <titles>
        <title>Example Book Title</title>
      </titles>
      <publicationYear>1980</publicationYear>
      <volume>I</volume>
      <firstPage>110</firstPage>
      <lastPage>155</lastPage>
      <publisher>Example Publisher</publisher>
      <edition>2nd edition</edition>
      <contributors>
        <contributor contributorType="Editor">
          <contributorName nameType="Personal">Miller, Elizabeth</contributorName>
        </contributor>
      </contributors>
    </relatedItem>
  </relatedItems>
</resource>
```

JSON

```
{
  "data": {
      "type": "dois",
      "attributes": {
          "url": "https://example.org/RelatedItem3",
          "prefix": "10.21384/ExampleBookChapter",
          "creators": [
              {
                  "name": "Garcia, Sofia",
                  "nameType": "Personal",
                  "givenName": "Sofia",
                  "familyName": "Garcia"
              }
          ],
          "titles": [
              {
                  "lang": "en",
                  "title": "Example Chapter Title"
              }
          ],
          "publisher": "Example Publisher",
```

(continues on next page)

(continued from previous page)

```
          "publicationYear": 1980,
          "types": {
              "resourceTypeGeneral": "BookChapter"
          },
          "relatedItems": [
              {
                  "titles": [
                      {
                          "title": "Example Book Title"
                      }
                  ],
                  "volume": "I",
                  "edition": "2nd edition",
                  "creators": [],
                  "lastPage": "155",
                  "firstPage": "110",
                  "publisher": "Example Publisher",
                  "contributors": [
                      {
                          "name": "Miller, Elizabeth",
                          "nameType": "Personal",
                          "givenName": "Elizabeth",
                          "familyName": "Miller",
                          "affiliation": [],
                          "contributorType": "Editor",
                          "nameIdentifiers": []
                      }
                  ],
                  "relationType": "IsPublishedIn",
                  "publicationYear": "1980",
                  "relatedItemType": "Book"
              }
          ]
      }
  }
}
```

Example: Digitized book chapter in a book (with an ISBN)

XML

```
<?xml version="1.0" encoding="UTF-8"?>
<resource
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns="http://datacite.org/schema/kernel-4" xsi:schemaLocation="http://datacite.org/
↪schema/kernel-4 http://schema.datacite.org/meta/kernel-4.5/metadata.xsd">
  <identifier identifierType="DOI">10.21384/ExampleBookChapter</identifier>
  <creators>
    <creator>
```

(continues on next page)

(continued from previous page)

```
      <creatorName nameType="Personal">Garcia, Sofia</creatorName>
      <givenName>Sofia</givenName>
      <familyName>Garcia</familyName>
    </creator>
  </creators>
  <titles>
    <title xml:lang="en">Example Chapter Title</title>
  </titles>
  <publisher xml:lang="en">Example Publisher</publisher>
  <publicationYear>2016</publicationYear>
  <resourceType resourceTypeGeneral="BookChapter"></resourceType>
  <relatedIdentifiers>
    <relatedIdentifier relatedIdentifierType="ISBN" relationType="IsPublishedIn">0-12-
↪345678-1</relatedIdentifier>
  </relatedIdentifiers>
  <relatedItems>
    <relatedItem relationType="IsPublishedIn" relatedItemType="Book">
      <relatedItemIdentifier relatedItemIdentifierType="ISBN">0-12-345678-1</
↪relatedItemIdentifier>
      <creators>
        <creator>
          <creatorName nameType="Personal">Garcia, Sofia</creatorName>
          <givenName>Sofia</givenName>
          <familyName>Garcia</familyName>
        </creator>
      </creators>
      <titles>
        <title>Example Book Title</title>
      </titles>
      <publicationYear>2016</publicationYear>
      <number numberType="Chapter">4</number>
      <firstPage>45</firstPage>
      <lastPage>63</lastPage>
      <publisher>Example Publisher</publisher>
    </relatedItem>
  </relatedItems>
</resource>
```

JSON

```
{
  "data": {
      "type": "dois",
      "attributes": {
          "url": "https://example.org/RelatedItem3",
          "prefix": "10.21384/ExampleBookChapter",
          "creators": [
              {
                  "name": "Garcia, Sofia",
```

(continues on next page)

(continued from previous page)


```
            "nameType": "Personal",
            "givenName": "Sofia",
            "familyName": "Garcia"
        }
    ],
    "titles": [
        {
            "lang": "en",
            "title": "Example Chapter Title"
        }
    ],
    "publisher": "Example Publisher",
    "publicationYear": 2016,
    "types": {
        "resourceTypeGeneral": "BookChapter"
    },
    "relatedIdentifiers": [
        {
            "relationType": "IsPublishedIn",
            "relatedIdentifier": "0-12-345678-1",
            "relatedIdentifierType": "ISBN"
        }
    ],
    "relatedItems": [
        {
            "number": "4",
            "titles": [
                {
                    "title": "Example Book Title"
                }
            ],
            "creators": [
                {
                    "name": "Garcia, Sofia",
                    "nameType": "Personal",
                    "givenName": "Sofia",
                    "familyName": "Garcia"
                }
            ],
            "lastPage": "63",
            "firstPage": "45",
            "publisher": "Example Publisher",
            "numberType": "Chapter",
            "relationType": "IsPublishedIn",
            "publicationYear": "2016",
            "relatedItemType": "Book",
            "relatedItemIdentifier": {
                "relatedItemIdentifier": "0-12-345678-1",
                "relatedItemIdentifierType": "ISBN"
            }
        }
```


(continues on next page)

(continued from previous page)

```
            ]
        }
    }
}
```

Use case: Describing related resources

The related item property can also be used to describe other types of relations between the resource being registered and related resources.

Describing related resources without identifiers

When a related resource does not have an identifier, the related item property can be used on its own.

```
<relatedItems>
  <relatedItem relationType="References" relatedItemType="Dissertation">
    <creators>
      <creator>
        <creatorName nameType="Personal">Miller, Elizabeth</creatorName>
        <givenName>Elizabeth</givenName>
        <familyName>Miller</familyName>
      </creator>
    </creators>
    <titles>
      <title>Example Dissertation Title</title>
    </titles>
    <publicationYear>1960</publicationYear>
    <publisher>Example University</publisher>
  </relatedItem>
</relatedItems>
```

Describing related resources with identifiers

Most related resources will have at least one of the identifier types specified in *relatedIdentifierType*.

In this case, the *12. RelatedIdentifier* property is strongly recommended for indexing. In addition, the *20. RelatedItem* property *may* be used to provide additional information about the related item.

```
<relatedIdentifiers>
  <relatedIdentifier relationType="IsCitedBy" relatedIdentifierType="DOI"␣
↪resourceTypeGeneral="JournalArticle">10.21384/ExampleJournalArticle</relatedIdentifier>
</relatedIdentifiers>
<relatedItems>
  <relatedItem relationType="IsCitedBy" relatedItemType="JournalArticle">
    <relatedItemIdentifier relatedItemIdentifierType="DOI">10.21384/ExampleJournalArticle
```

(continues on next page)

(continued from previous page)

```
↪</relatedItemIdentifier>
    <creators>
      <creator>
        <creatorName nameType="Personal">Garcia, Sofia</creatorName>
        <givenName>Sofia</givenName>
        <familyName>Garcia</familyName>
      </creator>
    </creators>
    <titles>
      <title>Example Article Title</title>
    </titles>
    <publicationYear>2021</publicationYear>
    <publisher>Example Publisher</publisher>
  </relatedItem>
</relatedItems>
```

1.6 XML Schema and Examples

XML Schema

The XML Schema is available here: https://schema.datacite.org/meta/kernel-4.5/metadata.xsd

XML Examples

Examples for various resource types and special cases can be found at https://schema.datacite.org/meta/kernel-4.5/index.html.